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AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING

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A Fast-Growing Aerosol Filler

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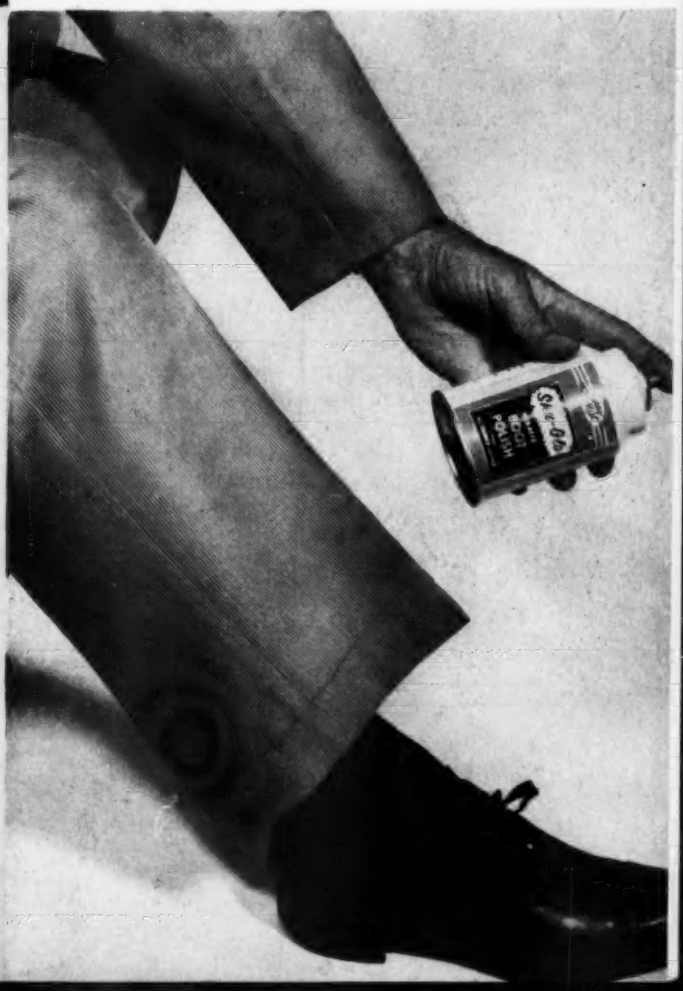

JULY, 1956

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COVER PICTURE

"Shu-Glo" a new aerosol shoe polish is packaged by National Spray Can Filling Corp., Brooklyn for Spray Mist, also of Brooklyn. See page 40 for more details.

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The magazine of pressure packaging

AEROSOL AGE

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BRICKBATS and BOUQUETS from the MAILBAG

We are very happy to learn that our industry will have its own trade publication.

Dr. Melvin Strobel
STROBEL PRODUCTS CORP.
Louisville, Ky.

Thank you for your complimentary copy. Being a pioneer in this industry, I fully appreciate the value of a publication of this nature, and look forward to receipt of these monthly issues, now that I am a regular subscriber.

Joseph L. Danziger
Brooklyn, N. Y.

I have received the initial issue of *Aerosol Age* and certainly wish to compliment your firm on turning out this publication. I sincerely hope that you will be able to keep up the editorial content over a prolonged period of time.

Harry E. Peterson
PETERSON FILLING & PACKAGING CO.
Danville, Ill.

We must say that we find *Aerosol Age* interesting and attractive. You would oblige us by sending twenty more copies airmail.

D. H. Steiner
SKANDINAVISKA AEROSOL AKTIEBOLAGET
Stockholm, Sweden

Aerosol Age is just the "gassing up" medium our industry needs. Contents very interesting, and especially informative to us unfortunates stashed out here in the woods.

G. G. Foster
G. BARR & CO., LOS ANGELES

Will you send *Aerosol Age* to me, as I would like to enjoy your magazine in the quiet of my home. Good luck to your entire staff. I am one of many who in the last five years have wished repeatedly for an instrument of this type to keep all phases of the aerosol industry informed.

James L. Jago
MINIT SPRAY CORP.
Chicago

Your magazine has been discussed by the writer with several fillers in the aerosol industry, and the consensus is that you are to be complimented on doing a fine job with your first issue.

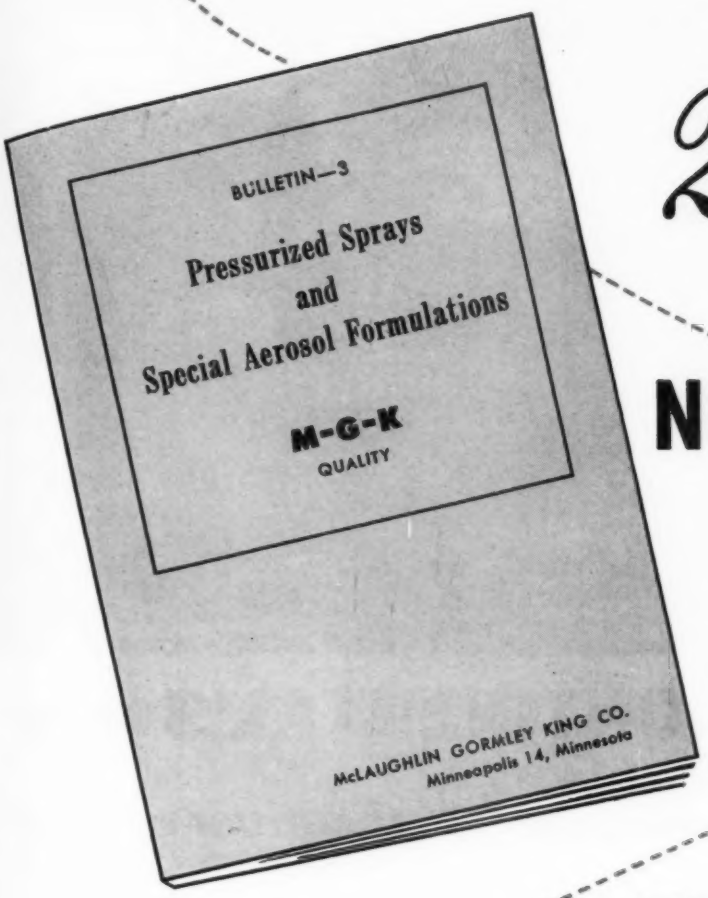
It is felt that the aerosol industry is growing to such an extent that there is certainly room for a separate publication covering developments in this industry. I certainly wish you the best of success in this new venture.

G. E. Renner
Sales Representative
CONTINENTAL CAN CO.
Chicago

(More Letters on Page 35)

In the Spotlight this month

- **Aerosol Survey** . . . Market registers another 30% gain for year 1955. Hair lacquers and room deodorants are star performers. Page 12.
- **Aerosol Expansion** . . . More research needed on such problems as corrosion, spray patterns, etc., to prepare for anticipated expansion in aerosol business. Page 14.
- **Shipping Aerosols** . . . Modern day aerosols present no appreciable shipment hazard. Shipping regulations should be revised periodically. Page 17.
- **Aerosol Fragrances** . . . Aerosol fragrances must be tested in specific environments. Every formula ingredient must be checked to prove it will not affect odor stability. Page 18.
- **Propellants** . . . Isobutane in propellant blends can give improved performance along with lower cost. Page 18.
- **Aerosol Production** . . . From incorporation to a full scale three-line operation in five months. A picture story of operations at Aerosol Techniques, Inc., Bridgeport. Page 19.
- **Insecticide Formulation** . . . "Leave the formulation of aerosol insecticides to experts," advises C. M. Clark, general manager of McLaughlin, Gormley King Co. Page 24.
- **Pressure Testing** . . . Tentative method for determining internal pressure of glass aerosol products approved by Aerosol Div. Administrative Committee of CSMA. See page 28.



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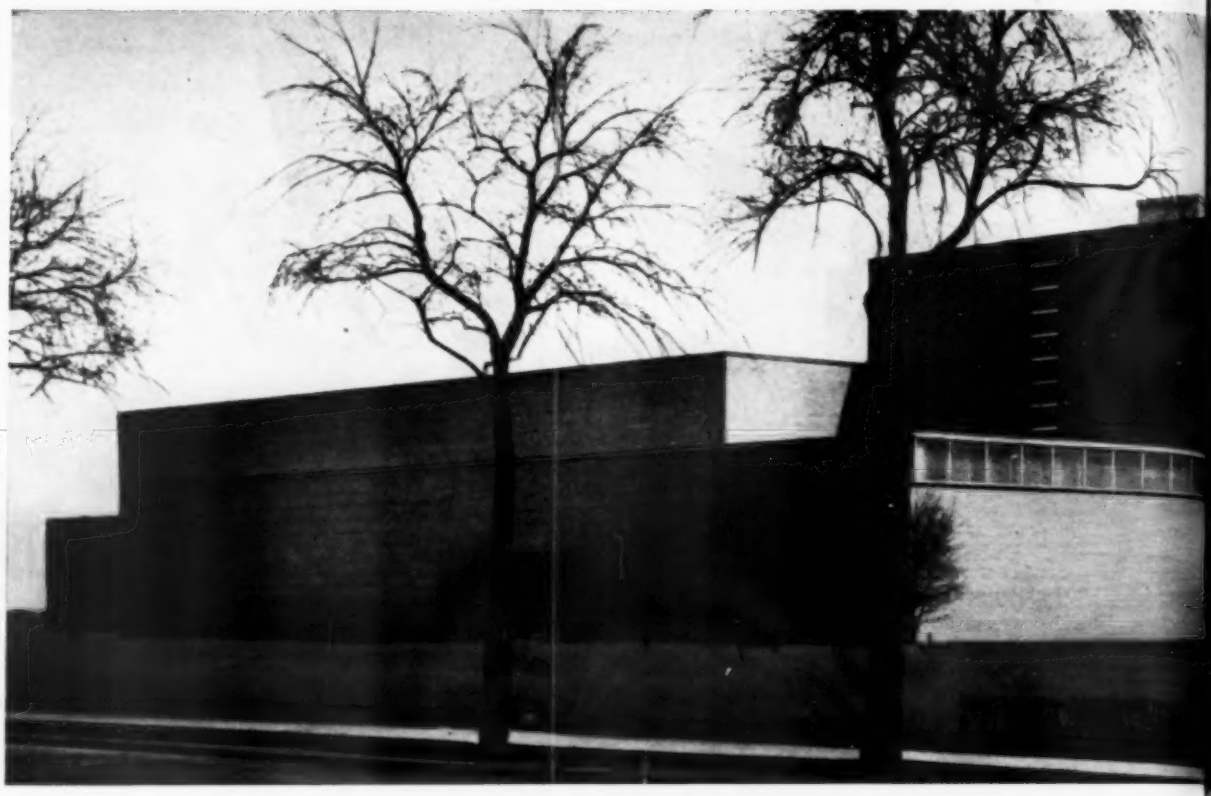

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The product of the handsome building pictured here will be more rapid improvement of cans and packaging methods, for the immediate benefit of Continental customers.

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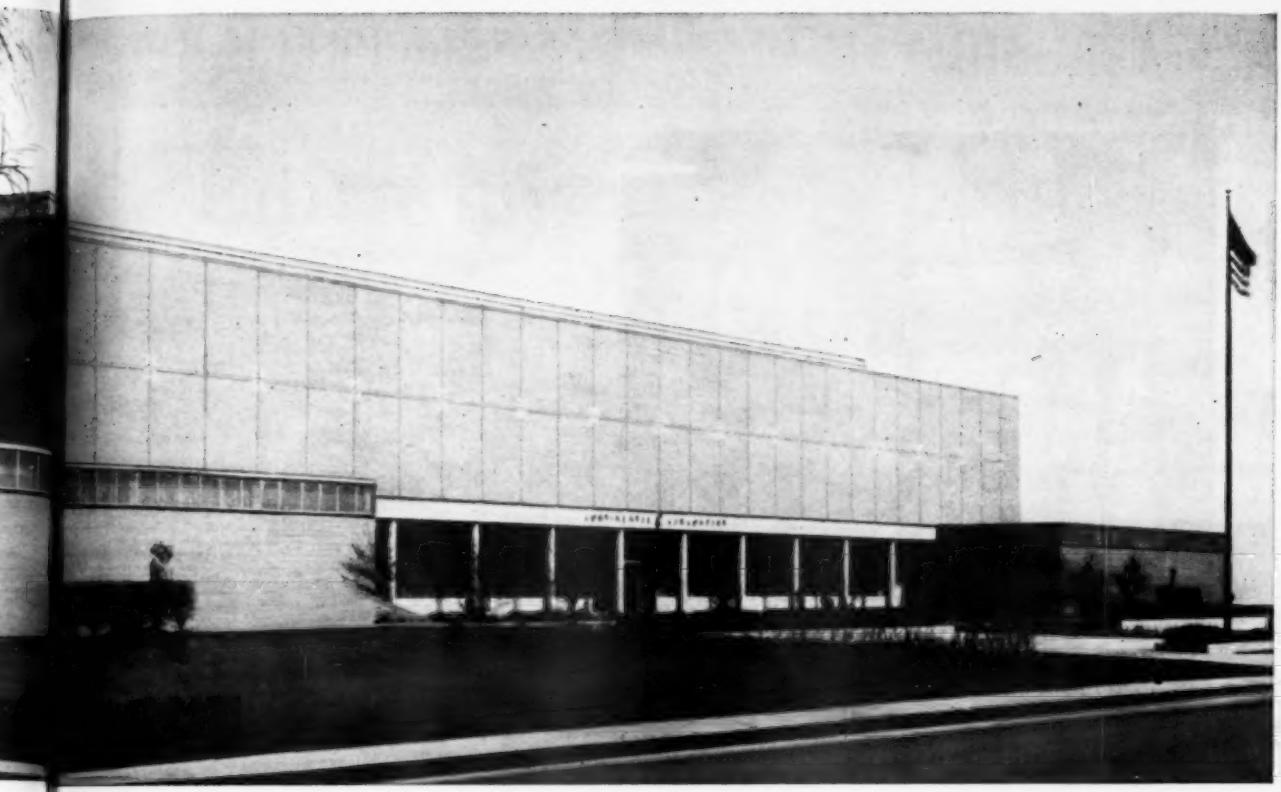
At their disposal are the most modern chemical, physical and engineering laboratories. Also contained in the 260,000 square feet of the center are complete pilot-plant facilities for checking out any individual proposal against considerations of cost, adaptability to present equipment, and good production practices.

Backing up the new center are other Metal Division laboratories at New York and Hayward, Calif., the Central Research and Development Division facilities in Chicago, which handle long-range experimental work, and 18 field laboratories across the nation.



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better cans and packaging methods

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New developments in aerosol cans will come from Continental faster than ever, now that our new Metal Division research and development center is working for you. Typical of what to expect is the just-announced outside stripe in color—matching the litho design—which gives new beauty to 202-diameter cans. Continental offers tailor-made aerosol cans for every need—dome-top in 3- to 16-oz. sizes, also 12-oz. concave top style.

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Editorials

THE sales curve on aerosol products continues to follow the sharply ascending pattern characteristic of any new, successful, dynamic and rapidly expanding industry, to judge from findings in the 5th annual Aerosol Products Survey just completed by the Chemical Specialties Manufacturers Association. An almost vertical climb is still evident in sales totals, and there is no evidence yet that the aerosol industry is anywhere near the leveling off or plateau period which even sharply expanding industries eventually reach. The bar chart of production growth (pg. 12) which summarizes the industry's sales record for the past five years pictures a straight-line upward trend which, if projected another year into the future, suggests that sales for 1956 will in all probability reach 325,000,000 units.

As one participant in the panel discussion on aerosol marketing at the recent CSMA Chicago convention pointed out, new and successful products normally follow a typical sales curve. After a relatively slow start they go into a period of practically vertical climb. This is eventually followed, once the sales potential of the market has been reached, by a leveling off period. Signs are beginning to appear on specific aerosol items that sales plateaus are being approached, but there seems to be no indication whatsoever that the industry itself is anywhere near its anticipated potential.

There are a number of star performers spotlighted in the latest CSMA market study. Aerosol room deodorants made the biggest gain, percentagewise, this year, with sales volume climbing 87 percent. The largest gain in total number of units packed was scored by hair sprays which moved to the tune of almost fifty-four million units in 1955, just two million short of taking first place away from insecticides, perennial top volume item since the big boom started in the aerosol market ten years ago.

Reports from the trade indicate that numerous new type aerosol products will be adding to sales volume this year and for a number of years to come. Pharmaceutical aerosols may not bulk large in volume for a number of years, but dollar value could be quite high. And if foods, as anticipated, start moving in substantial volume in aerosol containers, the rise of the sales curve could become even steeper.

* * *

THE major factor standing in the way of an even more rapid expansion in the aerosol field is the lack of basic research. There is a tremendous volume of work to be done on such matters as particle size, spray patterns, flammability and other hazards, corrosion, pressure, compatibility, etc.

As in so many other fields, the bulk of the research burden in the aerosol field has fallen on the supply trades. But their efforts, logically enough have had to be concentrated primarily on such practical and early productive matters as container design, development of new propellants, new container linings, inhibitors, new and improved valves, etc. Few have had the time or the funds to undertake investigations of the basic problems which demand long-term research and offer no early prospect of results which can rapidly be translated into profits.

With essentially no exceptions, the custom fillers do not have the resources to finance the research effort needed, nor do the trade associations connected with the aerosol field have funds for basic research. While the CSMA has done a tremendous amount of work on developing test procedures, and will shortly be announcing the culmination of long years of committee work along this line, there is obviously a limit to what can be done with donated services. The need for really basic research still exists.

Perhaps the answer might be a pooling of resources to form an industry-wide research group such as have been so conspicuously successful in many other fields facing the same need for industry-wide cooperation in the solution of common research problems.

Room Deodorants and Hair Lacquers

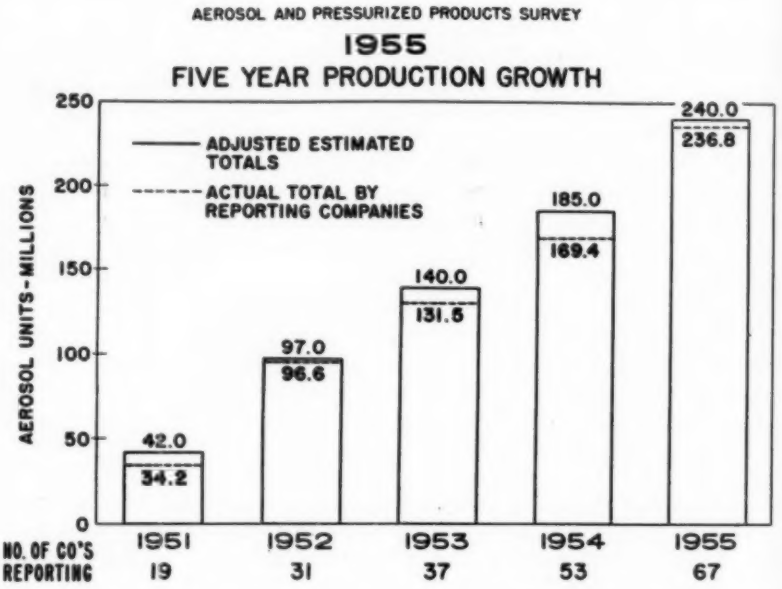
pace quarter billion dollar aerosol industry

CLIMBING 86.7 per cent in one year, aerosol room deodorants led the field in percentage gain in 1955 according to the annual survey of the aerosol industry made by the Chemical Specialties Manufacturers' Association.

Meeting in Chicago's Hotel Drake last month at their annual mid-year convention, members of CSMA were told that the U.S. and Canada produced 240 million units of self-spraying push-button products with a retail value of 250 million dollars last year. Hair net sprays, reaching a 53.7 million unit peak, nearly nudged insecticides out of first place. Insecticides accounted for just under 56 million units (23.3 per cent of the industry total). Overall production was up about 30 per cent in units and 32 per cent in dollars, over totals for 1954. The overall insecticide figure was made up of approximately thirty nine million units of space insecticides, eight million of residual insecticides and almost nine million of mothproofers.

Other aerosol products showing good progress in the fifth annual survey were: shave lather, 45.4 million units, up 7.3 per cent; miscellaneous personal products including shampoos, perfumes, colognes, personal deodorants, sun tan oils, and hand lotions, 14.2 million units; pigmented and metallic paints, 7.7 million units; and artificial snow, 6.8 units.

Miscellaneous personal products accounted for 14.2 million units, including such items as shampoos, perfumes, cologne, deodorants, sun tan oils and hand lotion. Miscellaneous products bulked 9.6 million units in 1955, including pet sprays, mildew preventives, lubricants, ignition sprays and anti-static sprays.



Fire extinguishers totalled 1.9 million units in 1955 (no previous year available for comparison as this was the first time the product was reported separately). The only other new category this year was hair lacquer which as noted above scored a tremendous sales gain this year. Previously hair lacquer sales had been reported under other personal products.

Figures were collected for the first time this year on products packed in glass containers. The reported total was 10,411,000 units. Splitting down the metal container figure, the 1955 total for units in containers of 12-ounce or greater capacity was 119.7 million while 105 million were packed in containers of six-ounce or smaller capacity.

Aerosol and Pressurized Products Survey
1955
FIVE YEAR GROWTH

	Aerosol Units (Adjusted Figures)	Retail Value (Estimated)
1951	42,000,000	$ 55,000,000
1952	97,000,000	$107,000,000
1953	140,000,000	$150,000,000
1954	185,000,000	$190,000,000
1955	240,000,000	$250,000,000
1955% Increase Over 1954	+30%	+30%

Reports collected on aerosol container and valve production, used as check points on the accuracy of the product survey, indicated that 1955 production of metal cans for the aerosol industry was slightly more than 257 million units, while valve production approximated 245 million units.

Frederick G. Lodes of Precision Valve Corp., served as chairman of the CSMA Aerosol Survey Committee. Other members were: Al Pero, Fluid Chemical Co., Frank Horman, A. Schrader's Son, and William Sherry, General Chemical Division, Allied Chem. & Dye Corp.

AEROSOL AND PRESSURIZED PRODUCTS SURVEY—1951-55

Note: Number of units shown include government contracts and are based on returns by 19 companies in 1951, 31 companies in 1952, 37 companies in 1953, 53 companies in 1954, and 67 companies in 1955. Figures shown do *not* include pressurized food products.

Number of Units Packed (Including Govt. Contracts)

	Glass Containers (All Sizes)	Metal Containers: High Pressure	Metal Containers: 12 Ounces & more	Metal Containers: 6 Ounces & less	TOTAL
SPACE INSECTICIDES					
1955	———	990,231	33,793,439	4,143,631	38,927,301
1954	———	535,900	27,208,183	2,346,561	30,090,644
1953	———	3,657,290	33,236,303	2,056,402	38,949,995
1952	———	610,349	29,456,906	2,060,568	32,127,823
1951	———	656,599	14,308,106	564,105	15,528,810
RESIDUAL INSECTICIDES—Roach & Ant Sprays, etc.					
1955	———	12,400	7,740,078	552,352	8,304,830
1954	———	———	6,437,189	223,908	6,661,097
1953	———	———	3,790,120	660,402	4,450,522
1952	———	———	1,473,178	276,312	1,749,490
1951	———	———	985,970	———	985,970
MOTHPROOFERS					
1955	500,000	549,708	7,522,868	170,775	8,743,351
1954	———	———	6,332,115	95,214	6,427,329
1953	———	———	3,579,813	255,624	3,835,437
1952	———	———	1,940,410	21,931	1,962,341
1951	———	———	804,030	———	804,030
ROOM DEODORANTS					
1955	———	7,500	12,402,293	19,700,387	32,110,180
1954	———	———	7,492,464	9,710,590	17,203,054
1953	———	———	7,444,148	8,325,597	15,769,745
1952	———	———	6,950,386	5,459,882	12,410,268
1951	———	———	3,526,254	3,760,555	7,286,809
PIGMENTED AND METALLIC PAINTS					
1955	———	———	7,203,339	520,029	7,723,368
1954	———	———	7,385,215	818,472	8,203,687
1953	———	———	7,752,631	504,001	8,256,632
1952	———	———	4,344,035	143,373	4,487,408
1951	———	———	1,743,732	36,926	1,780,658
CLEAR PLASTIC SPRAYS					
1955	———	———	1,419,902	104,240	1,524,142
1954	———	———	1,257,476	96,137	1,353,613
1953	———	———	2,191,722	168,711	2,360,433
1952	———	———	2,219,556	14,915	2,234,471
1951	———	———	952,188	———	952,188
FIRE EXTINGUISHERS					
1955	———	———	1,930,635	41,004	1,971,639
	(No report for earlier years)				
OTHER HOUSEHOLD PRODUCTS—Waxes, Oven & other cleaners, insect repellents, water repellents, rug shampoo, etc.					
1955	500,000	———	2,826,503	2,877,600	6,204,103
1954	———	———	1,884,509	1,224,063	3,108,572
1953	———	———	1,729,718	613,874	2,343,592
1952	———	———	1,951,897	1,147,971	3,099,868
1951	———	———	218,787	———	218,787

Number of Units Packed (Including Govt. Contracts)

	Glass Containers (All Sizes)	Metal Containers: High Pressure	Metal Containers: 12 Ounces & more	Metal Containers: 6 Ounces & less	TOTAL
SHAVING LATHER					
1955	———	———	9,098,163	36,289,212	45,387,375
1954	———	———	5,109,819	37,184,809	42,294,628
1953	———	———	2,280,893	22,018,352	24,299,245
1952	———	———	3,171,976	13,510,402	16,682,378
1951	———	———	(a)	(a)	(a)
HAIR LACQUERS					
1955	189,253	———	21,426,897	32,174,635	53,790,285
1954	———	———	(b)	(b)	(b)
1953	———	———	8,201,652	6,918,480	15,120,132
1952	———	———	(b)	(b)	(b)
1951	———	———	(b)	(b)	(b)
OTHER PERSONAL PRODUCTS—Shampoos, perfumes, colognes, deodorants, sun tan oil, hand lotion, etc. See notes (a), (b).					
1955	8,854,831	———	1,435,589	3,930,363	14,220,783
1954	———	———	12,188,129(c)	28,190,994(c)	40,379,123(c)
1953	———	———	1,154,976	2,624,902	3,779,878
1952	———	———	2,245,658(c)	6,521,151(c)	8,766,809(c)
1951	———	———	1,043,066(d)	2,606,330(d)	3,649,396(d)
MEDICINALS & PHARMACEUTICALS—Athlete's Foot Remedies, burn preparations, antibiotics, etc.					
1955	357,705	———	256,500	840,974	1,455,179
1954	———	———	609,502	524,903	1,134,405
1953	———	———	164,953	666,348	831,301
1952	———	———	(e)	(e)	(e)
1951	———	———	(f)	(f)	(f)
ARTIFICIAL SNOW (All types)					
1955	———	———	5,869,673	949,044	6,818,717
1954	———	———	5,024,165	1,059,231	6,083,396
1953	———	———	7,368,656	1,533,429	8,902,085
1952	———	———	(g)	(g)	(g)
1951	———	———	(g)	(g)	(g)
MISCELLANEOUS PRODUCTS—Pet Sprays, mildew preventives, lubricants, ignition & anti-static sprays, etc. See notes (e), (f), and (g).					
1955	9,771	107,916	6,793,827	2,690,253	9,601,767
1954	———	89,536	4,465,851	1,867,169	6,422,556
1953	———	———	1,680,268	936,177	2,616,445
1952	———	———	9,685,013	3,413,036	13,098,049
1951	———	———	1,896,292	1,081,210	2,977,502
TOTALS—ALL PRODUCTS					
1955	10,411,560	1,667,755	119,719,706	104,984,499	236,783,520(h)
1954	———	625,436	85,394,617	83,342,051	169,362,104(i)
1953	———	3,657,290	80,575,853	47,282,299	131,515,442(j)
1952	———	610,349	63,439,015	32,569,541	96,618,905
1951	———	656,599	25,478,425	8,049,126	34,184,150

NOTES:

(a) 1951 Shaving Lather included under "Other Personal Products."

(b) 1951, 1952, and 1954 Hair Lacquers included under "Other Personal Products."

(c) Includes Hair Lacquers.

(d) Includes Hair Lacquers and Shaving Lather.

(e) 1952 Foot Sprays included under "Other Personal Products"; 1952 Medicinals included under "Misc. Prods."

(f) 1951 Medicinals included under "Miscellaneous Products."

(g) 1951 and 1952 Artificial Snow included under "Miscellaneous Products."

(h) Official 1955 production total adjusted to 240,000,000 units to include estimated production of companies not reporting.

(i) Official 1954 production total adjusted to 185,000,000 units as in (h) above.

(j) Official 1953 production total adjusted to 140,000,000 units as in (h) above.

Inset: T. D. Johnson moderated the panel on Aerosol Marketing. Participating in the panel (l. to r.) were: Robert Davison, Colgate Palmolive Co.; Philip Sagarin, Valve Corp. of America; Harvey Tull, Crown Cork and Seal Div.; W. W. Machmer, General Chemical Co.; Douglas Atlas, G. Barr & Co.; Robert Williams, Audit and Survey Co.

AEROSOL topics were prominent on the program of the 42nd mid-year meeting of the Chemical Specialties Manufacturers Association, held May 20-22 at the Hotel Drake, Chicago. Attendance of 749 was a record for a mid-year meeting. While there were numerous papers on aerosol topics at the general sessions, much of the work of the aerosol division took place in committee sessions.

The Administrative Committee of the Aerosol Division acted on the matter of "safe fill," accepting a resolution that "An aerosol container is considered to have a safe fill if there is present within the container no less than seven and one-half per cent head space when the contents are heated to 130° F." Four new aerosol containers were added to the CSMA list of minimum fills for insecticides, room deodorants and artificial snow. This will be covered in an early CSMA bulletin.

A "Tentative Method for Determining the Internal Pressure of Glass Aerosol Products" prepared by the Aerosol Division Scientific Committee was approved by the Aerosol Division Administrative Committee. Full text of the method appears elsewhere in this issue (See page 28).

Another topic of vital concern to aerosol insecticide packagers discussed by the Insecticide Scientific Committee was pressurized space sprays. John H. Fales, entomologist in the Pesticide Chemicals Research Section, Entomology Research Branch, Agricultural Research Service of USDA, gave the committee a progress report on work that has been done to date on these products at Beltsville. The report was offered to help the committee in their effort to develop a biological test method for the evaluation of pressurized space sprays which have been attracting more and more attention recently in the insecticide field.

The following were named as members of the Aerosol Division Administrative Committee, to take over at the December meeting: Charles E. Beach, John C. Stalfort & Sons, Baltimore, re-elected chairman; E. J. McKernan, Seaquist Mfg. Corp., Chicago, vice-chairman; Arthur M. Adler, Helene Curtis Industries, Chicago; William T. Egan, Colgate-Palmolive Co., New York; and John G. Ellis, Sprayon Products Co., Cleveland.

Featured on the Aerosol Division program was a panel discussion on Marketing moderated by T. D. Johnson, Jr., manager of aerosol propellant sales for Kinetic Chemicals Division of du Pont, who emphasized that a better job of forecasting must be done by the entire industry if we are to be ready with the correct quantities of propellants, containers, valves, concentrates and finished products to meet demand as it develops in this rapidly expanding industry.

Philip Sagarin of Valve Corporation of America predicted a market for 600,000,000 aerosol units by 1959. He spotlighted the problems which valve suppliers face in a market in which the average price of the unit they sell has dropped from its former level of about 8¢ to less than half that figure today. A few years ago, he reminded, there was just one valve type, where today there are numerous types many of which have to be tailor made to suit the needs of special products.

Douglas Atlas of G. Barr & Co. represented custom fillers on the panel. To meet tomorrow's needs adequately, he observed, it is first necessary to be thoroughly familiar with everything we are working with today. More research is needed on such problems as corrosion, spray patterns, etc., and better machines, processes and more accurate cost studies are urgently needed. We can prepare for the future in three ways, he suggested, by accumulating adequate capital to enable us to finance our projects, by training scientists

Chemical Specialties Manufacturers Association —

Aerosol Division's Discussion Centers on: Pressurized Insecticide Sprays; A New Method for Testing Pressure in Glass Containers; Shipping Regulations; and Stability of Aromatics in Aerosol Packs.

and engineers to do basic research work, and by designing machines that can produce aerosols better and more cheaply. "If it is impractical to build machines to make still non-existent products," he observed, "we can at least train men who will be capable of designing them."

W. W. Machmer of General Chemical Co. discussed propellant supplies. Plant facilities, tank cars and cylinders must be forecast on a long term basis if supply is to be kept in close balance with demand. Fluorine reserves, he reported, are adequate to make any quantity of fluorhydrocarbon propellants which may be needed over the next five to ten years, but decisions must be made well in advance on what future needs may be if propellant suppliers are to have adequate capacity ready to meet demand as it develops. He predicted a rapid growth in demand in the personal products field. Among the personal product group, rapid growth may be anticipated, Mr. Machmer believes in such products as sprayon bandages and gloves, permanent wave lotions, baby oils, baby powders and bath powders. Among the specialty products, household adhesives and windshield defrosters look particularly promising.

Harvey Tull of Crown Cork & Seal Div. of Crown Can Co., representing container manufacturers on the panel, stressed the difficulty of making accurate forecasts in a market expanding as rapidly as is the aerosol market. His company, he indicated, makes short term forecasts to plan production, necessary inventories, anticipated demand, etc., while long term forecasts are used to plan capital investments. Product managers and area sales managers are queried periodically and are continuously asked to revise their estimates to keep them current. The market researchers also check with loaders, propellant manufacturers, valve suppliers, etc., and the final estimates are thus a composite of all the individual opinions, factored in terms of past experience and apparent future trends.

Robert Davison of Colgate-Palmolive, another panel participant, compared the scientific approach in market studies with simple personal evaluation, and indicated his own belief in the superiority of scientific forecasting. He suggested a five-point plan for application to any marketing forecast study: get a bench mark, apply it, study its effectiveness, discard it when it is found to give faulty predictions, and then get a new bench mark.

A typical example of employment of a bench mark was cited by the speaker in connection with sales of aerosol hair sprays. Here an excellent parallel curve was provided by the growth curve in sales of home permanents. Similarly, in a different field, sale of home washing machines was found to give an accurate prediction of anticipated detergent sales.

Frederick Lodes, Precision Valve Corp., presents findings in latest industry market survey.

Charles E. Beach, Stalfort Chemical Co. re-elected chairman of the Aerosol Division Administrative Committee.

Seated: Donald S. Tuttle, Risdon Valve; Larry Hall, DuPont; and Ralph Dorland, Aerosol Age. Standing: Mosris Root, G. Barr; and Bill Wellman, Colgate Palmolive.

J. B. Jakob, Continental Can; T. A. Wallace, General Chemical; E. J. McKernan, Seaquist Valve; Dr. Winston H. Reed, Aerosol Process; and L. G. Cannella, Continental Can.

Bob Shiels, Al Dunham, Ed Budzilek, Al Marks, all of Wheaton Glass.

F. R. Horman, G. E. Torgerson, J. G. Scattergood, all of Schrader Valve; and John Struthers, John Struthers Montreal.

Gene Rose, Gene Rose Co.; Morton E. Bader, Olin Mathieson, Gordon West, Newman Green; Ted Riedeburg, Emulsol; and Melvin Goldberg, Pesticide Sales.

Mr. Davison indicated that the aerosol sales curve has been typical of that for any new and successful product. A relatively slow start was followed by a period of very rapid growth. This fast growth period will inevitably be followed by a tapering off period once a sales plateau has been reached. When this sales plateau will be reached, and how high it may be, are determined by the market potential for the industry, or for specific products in the field.

Concluding the panel, Robert Williams of Audits & Survey Co., New York, outlined how retail store audits are made. The purpose, of course, is to attempt to predict what the typical consumer will buy tomorrow on the basis of what he is buying today. Many different types of information may be gathered: the typical unit purchased, frequency of purchase, the percentage sale a particular brand may have of the entire market, average inventory, what items may be out-of-stock, geographical differences in purchasing habits, effect of test advertising programs, promotions, point-of-sale material, etc. on sales, effect of changes in price or package design, seasonal variations, etc.

He emphasized the difficulty any manufacturer has in promoting the sale of a new product in the retail food market. Products are of course vieing with one another all the time, — the first contest being for shelf space. A few years ago there were but a thousand brands and types of articles handled by the typical retail outlet, but today there are probably three to four thousand items in the average store. Thus only a few feet of shelf space can be given any single product.

Mr. Williams reported that in their studies on insecticides, twenty was the largest number of brands they found stocked in a single store. The average was between five and six. Yet, he noted, there are 750 brands of insecticide sold nationally, of which he estimated 350 are aerosols.

H. A. Campbell, chief inspector of the Bureau of Explosives, Association of American Railroads, New York, spoke on "The Applica-

tion of the Interstate Commerce Commission Regulations to the Shipment of Aerosols and the Enforcement of the Regulations." He reviewed the historical background of the problem of shipping aerosols from the early days when transportation of compressed gases in cans was under general prohibition, and all such shipments had to be made on specific permits, through the period of amending the regulations to their present form. Further changes and clarification are still much needed, in Mr. Campbell's opinion.

He indicated his belief that modern day aerosols present no appreciable shipment hazard. Limits on the pressures and the quantities permitted to be shipped have been successful in controlling the situation, and there has been no record of any injury resulting. Flammability of various aerosol propellants has presented a problem in addition to pressure. Industry, he suggested, should set up its own program to see that all aerosols are clearly marked as to their relative hazard on this point.

Mr. Campbell noted that as changes occur in the industry, and as new facts are learned about the relative danger of materials already in use, it is obviously desirable to review regulations from time to time, removing any restrictions which have been proved to be unnecessary and perhaps strengthening other sections. Such a general review of regulations for the shipment of aerosols is currently imminent, Mr. Campbell said. He is charged with responsibility for submitting suggestions on revising present regulations by June 1. Mr. Campbell met with members of the industry following the close of the CSMA session to determine industry opinion on suggestions which he is preparing to make to the Interstate Commerce Commission.

HERBERT G. KAINIK of Dodge & Olcott, Inc., New York, talked on "Perfume Oils, Stability, Etc. in Aerosols," summarizing the results of a series of tests of various aromatics.

A spray aerosol formula composed of 4% perfume fragrance, 36% an-

Seated: John Gothard, Swift & Co.; A. G. Grady, Sinclair; and Phil Hauser, Root-Lowell. Standing: John Rodda, Fairfield; Richard F. Burke, and Dean Rockwell, both of Tube Manifold.

William E. Baulieu, Bridgeport Brass; John J. Buchanan, Continental Can; Donald J. Menhenett, Everready Pressurized Prod.; and John Stoddard, Prentiss Drug.

Seated: H. H. Moburg, Rex Research; Bob Foresman, Aerosol consultant; and Richard F. Barrymore, van Amerin gen-Haebler. Standing: Ken Leghorn, Sun Tube; and Joseph C. Pizzurro, Precision Valve.

J. M. Whalen, W. F. May, and H. L. Roberts, all of American Can.

Pete Clapp, Western Filling; Ray Lindquist, Rexall Drug; and Raoul Pantaleoni, Alpine Aromatics.

hydrous alcohol and 60% propellant was used to run the experiments. The propellant consisted of a fifty-fifty mixture of propellants 11 and 12. All test samples were filled in 6 oz. containers of one pound tin plate without lacquer linings. Preliminary tests to establish fragrance miscibility were run by incorporating the fragrances in the spray aerosol and storing in glass pressure flasks for one month at room temperature. No attempt was made to select the samples for test on the basis of miscibility or stability in the test propellant.

30 spray aerosols were prepared in duplicate and tested. pH readings were taken, odor evaluated to indicate stability, any tendency to cause corrosion was noted and internal condition of test container checked. Some fragrances remained stable, although experiencing an increase in acidity. Others remained stable when stored at room temperature, but the duplicate samples stored at elevated temperatures showed evidence of odor change. The use of reactified essential oils, from which the water has been removed, was found to aid materially in maintaining fragrance stability.

The corrosion studies which were part of the work indicated that fragrance breakdown is not always accompanied by corrosion, and inversely corrosion is not necessarily accompanied by fragrance breakdown.

Any additions to the formula must be checked out to prove conclusively that they will not affect odor stability. For example, many fragrances discolor in the presence of hexachlorophene. Some perfume fragrances affect the phenol coefficients of certain quaternary ammonium compounds and these products in turn deleteriously affect many perfumes. Since the products mentioned are germicides, frequently used in spray antiperspirants and personal deodorants to provide germicidal action, it is important to select fragrances which will not only add sales appeal but which will also not reduce the efficiency of these important components of many formulas.

Certain fragrances which have proved stable in alcohol/propellant systems, it was also noted, may break down in the presence of aluminum salts or may affect the acidity of spray antiperspirants which may be based on these salts.

In conclusion the author emphasized strongly the necessity of testing fragrances in specific environments.

In his paper, "Propellant A — A New Propellant Blend," Winston H. Reed, Aerosol Process Co., gave a progress report on the development of a new group of propellant mixtures that would achieve:

lower costs

improved performance through improved solubility characteristics and lower density, etc.

greater flexibility through providing alternative satisfactory propellants

The initial object of the program was to develop a satisfactory propellant mixture, containing a low boiling paraffin hydrocarbon, which mixture would be non-flammable and would remain non-flammable under normal conditions of aerosol production, storage and product use. A further objective was to recommend a safe and economical method of mixing and handling such a propellant in bulk quantities and to determine physical data essential for engineering use and quality control.

The aerosol industry has long sought to develop non-toxic, non-flammable propellants that would either be cheaper or better solvents than the fluorinated chlorohydrocarbons commonly in use. Attempts were made to achieve this goal by adding a hydrocarbon or some other cheaper low boiling organic compound to the standard propellants. In some case even CO_2 gas was tried. Use of hydrocarbons, however, has presented flammability problems that have not been solved.

Propellant A was the result of this experimental work. It designates a range of safe compositions of Propellant 12 — Propellant 11 — isobutane of varying pressures. Patent applications have been filed and assigned to Bridgeport Brass Co. Propellant A possesses several unique characteristics: the major one being that by itself or in standard type aerosol formulations for which it is suitable it fractionates under normal vapor loss conditions encountered in production or service in such a manner as to maintain non-flammability in both liquid and vapor phases throughout the fractionation process.

Another useful characteristic is that the amount of isobutane used with a 35 psig mixture of Propellant 12 — Propellant 11 (50-50 weight per cent ratio) can be varied over the range of isobutane percentages of interest for aerosol usage without any appreciable variation in the pressure of the system. Stability of pressure with some permissible variation in the amount of isobutane is a distinct advantage.

Propellant A was thoroughly tested for acceptability for production and service use and no problems were found to be involved in using standard valves, gaskets and standpipe materials. The primary objective was to develop a lower cost propellant and this was accomplished, the cost saving afforded by use of Propellant A as compared with a 50-50 weight percent blend of Propellant 12 — Propellant 11 being six per cent.

Sidney Katz, Armour Research Foundation, Chicago, discussed "The Automatic Measurement of Aerosol Particles." An ideal counting method, he observed, should include a means of detection that does not distort the particles, that responds to both size and particle number and is sufficiently rapid to conduct the measurement before the particle can undergo appre-

(*Turn to page* 51)

For those interested in referring to the complete text of any of the papers presented at the CSMA Chicago convention, the Association is publishing the complete proceedings of the 32nd mid-year meeting. The proceedings will be available later this year. They are supplied without cost to all members of CSMA, and to all who registered at the Chicago meeting. All others wishing copies may obtain them from the Association at $7.50 per copy (add .50 if outside U. S. A.). The CSMA address is 50 East 41st St., New York City.

"Key in The Door" to Three-line Operation in Five Months at Aerosol Techniques

Top Photo:

Peter Sgaramella, (l.) chief chemist, and Saul Birsan, research chemist, are the nucleus for the company's expanding technical laboratory.

Center Photo:

H. R. Shepherd. Nerve center of the organization is the working desk of the president.

Bottom Photo:

Norbert Smith, manager of production and manufacturing, examines new aerosol shampoo on production line just started May 15.

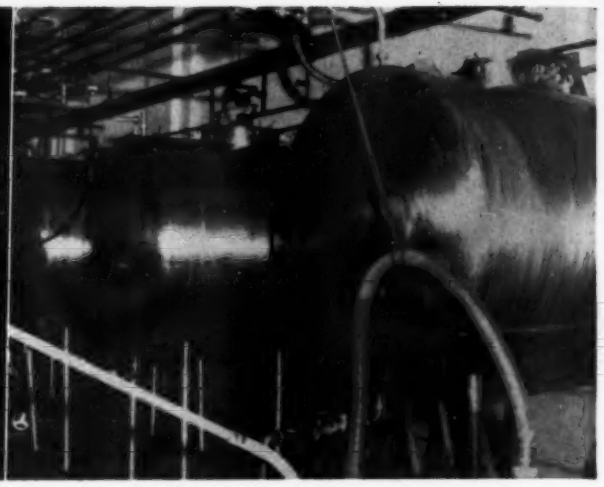
OUR people are the most important thing in our business. Our customers are happier, the machinery works better, the production line runs more smoothly and the business prospers — if our people work well together. Summed up, this is the philosophy of H. R. Shepherd, president of Aerosol Techniques, Inc., Bridgeport, Conn.

One of the fastest growing packagers in the aerosol field, Aerosol Techniques has spurted from incorporation as a company last fall, to a full scale custom packer operation, with three aerosol filling lines capable of producing 14,400 aerosols an hour. A new line, equipped with Mojonnier filling machinery, will package 120 units a minute, pressure fill or cold fill. An atmosphere of orderly enthusiasm is apparent in the office plant, and laboratory.

At weekly management conferences, key personnel meet to review problems that have come up in production, research, order processing, customer relations, etc. Plans for future operations are mulled over by the group and decisions made on the spot. The company is actively run by the supervisory personnel. Except for Mr. Shepherd there are no other officers of the corporation at the moment; however, it is planned to make appointments within the company as the titles are earned.

The swiftness with which this plant was established and the rapid upswing in production may stand as somewhat

Incoming raw materials are handled by tow motor trucks. All shipments arrive at Bridgeport plant by trailer truck.



New stainless steel tanks for mixing and formulating cosmetics and pharmaceuticals at Aerosol Techniques, Inc.

of a speed record in the aerosol industry. Actually, full scale production on the first line wasn't begun until January of this year. Now, with three lines, having flexibility to handle glass bottles or cans, pressure filled or cold filled, working two shifts, with a yearly rated filling capacity of approximately 40 million units, the company has become a big factor in the East Coast aerosol packaging industry. Cosmetics and pharmaceuticals are the primary fields of interest.

Doubling of the plant area of 30,000 sq. ft. is imminent as the company began building, June 1, a new addition for increased warehouse space.

Newest of the filling lines went into operation about the 15th of May. Equipped with machinery from MRM CO., Brooklyn, N. Y., production on this line reaches 60 units per minute. Designed for pressure filling, the equipment will seam the top of American Can Co.'s container, which has the valve staked directly into the top.

Another line which began operation about two months ago has Mojonnier equipment capable of doing either pressure filling or cold filling. 120 units per minute can be handled on this double line system.

The third line, having Hope Machine Co. apparatus, can be used to fill cans or glass containers, and allows pressure or cold filling. It works on a feed bar arrangement for conveyance rather than the typical continuous chain system, and is a dual line with piston type filler action (un-

Assembled units emerge from the hot water test bath and are tested in quality control procedure by touching valve button and noting spray pattern on backboard.

Mojonnier equipment fills the containers with hair spray formulation and propellant. A weighing station at this point is used to check correct delivery of the ingredients.

like the Mojonnier equipment which is electromagnetic).

A different way of handling bulk propellant storage has worked out well for the company. Incoming shipments of propellant are discharged into six — 1,000 gallon receiving tanks; and this product is then pumped to three intermediate holding tanks.

By assembling a larger number of smaller tanks, the company has found that they can schedule propellant shipments and handle the types of propellants necessary in the packaging of diverse aerosols to greater advantage.

Other new equipment includes several stainless steel tanks: one 1,000 gal. compounding kettle and one 1,000 gal. fat melting kettle to make up soaps and emulsions; one 1,000 gal. intermediate mixing tank for formulating hair sprays and similar products; three 550 gal. mixing tanks for handling colognes, deodorants, etc. Also, three 500 gallon black iron tanks have been installed for mixing insecticide and household formulations. These are kept completely separate from cosmetic and pharmaceutical compounding.

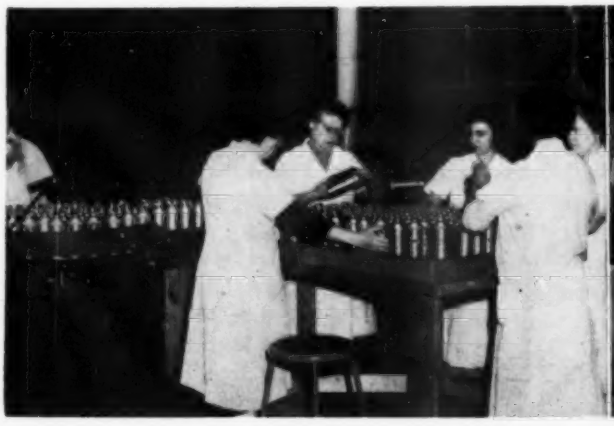
Norbert G. Smith is director of production and manufacturing. He was formerly chief chemist with Connecticut Chemical Research Corp., Bridgeport. The laboratory staff of four is headed by Peter Sgaramella. Saul Birsan has joined the company as research chemist.

"Give service, — expand research, — put profits into new equipment and technical development" is the formula followed by Aerosol Techniques Inc., — one of the fastest growing packagers in the aerosol field. The company is currently operating three filling lines with a rated capacity of about 14,000 units per hour.

During this stage of growth, Mr. Shepherd emphasized that the theme will be "give service — expand research — put profits into new equipment and technical development." The company has started a research program with an eastern university on basic problems with aerosols. This graduate fellowship was set up for a student who will eventually come to work for Aerosol Techniques.

A complete aerosol service center is a must for proper handling of customers in aerosol packaging, according to Mr. Shepherd. Recommendations as to types of valves, containers, formulations, markets to test, labels to apply — all these things should be offered to the customer as a service. The company believes that protection for the customer, for the packager and for the industry is assured only if all facets of the aerosol package are carefully reviewed.★

Containers are rigidly inspected by this group for scratches, dents, poor lithography, etc. They are moved along the conveyor belt in a double line. Speed is about 60/min.



After inspection, finished aerosols are ready for packing. Protective cardboard cylinder is placed over dome and cans are packed in printed cartons ready to be shipped.

Legal Aspects of the CARTER CASE

by Robert P. Schwartz* and Burton Perlman**

THE recent decision of the U. S. Court of Appeals for the Fourth Circuit in the case of Colgate-Palmolive Company et al v. Carter Products, Inc. et al has attracted wide attention in the aerosol industry. An examination of the decision would seem to be indicated to determine what its effect might be on others in the industry not directly parties to the action.

The major finding in the decision is that the patent under which "Rise" pressurized shaving cream is made was sustained and defendants were ordered to stop infringing the patent with their products, and to pay damages for past infringement. More particularly, the Circuit Court sustained a District Court decision upholding the validity of patent No. 2,655,480 issued to joint inventors Spitzer, Reich and Fine, under which patent plaintiff, Carter Products Inc. held an exclusive license. The decision not only enjoined the defendants, including Colgate-Palmolive Company, from infringing the patent, but in addition the defendants were enjoined from use of trade secrets belonging to plaintiffs.

Manufacturers, distributors and even retailers of all types of aerosol products are no doubt concerned over the effect of this decision on products both on the market and those still in the planning stage.

For the guidance of those affected, it should be stated at once that no new principles of law are enunciated in the decision. The portion of the decision dealing with patent infringement is straightforward. That is, the court considers whether the patent is valid, its validity being attacked on the usual conventional grounds, first that the invention is not new, and second, that what is claimed in the patent does not amount to an invention.

Were the court convinced either that the invention was not new, or that there was no invention, it would have held the patent to be invalid and thrown this portion of the case out of court.

But the Court concluded that there was novelty and isolated just what was novel, saying:

> "There was, of course, nothing novel in the use of soap to make lather, nor in the use of a can as a container, nor in the use of a gas liquefied by pressure and mixed with another liquid to spray the mixture from the can. What was novel was to get a mixture of the right gases, with the right soaps in the right proportions, confined in a container under the right pressure, so that a lather satisfactory for shaving purposes would be produced when the mixture was allowed to emerge."

The defendants argued against this position, and produced various prior patents, in the light of which they claimed that what the inventors had done was nothing really new. In overcoming this argument to reach the above quoted conclusion that what the inventors had done was novel, the Court examined the invention and said just what it found the invention to be in these words:

> "It is this combination of a relatively small group of Freons, that manifest those desirable properties of low water solubility and the optimum characteristics of non-smarting and of lather quality, with aqueous soap solutions that constitutes the invention of Spitzer and his associates. . . . They found that Freons having a solubility in water not exceeding about 32 cc. of gas to 100 grams of water to be the type of Freons productive of the optimum of the other two qualities desired in the lather composition. This is what the specifications of the Spitzer patent teach, and all 8 of the claims in suit are responsive to this teaching. Claims 6 and 9 are limited to the use of Freon-114. Claims 8 and 10 are limited to the use of Freon-12. Claims 18 and 20, which are based upon claim 16 as a parent claim, prescribe the use of any one of a group of five Freons, including 12 and 114. Claims 8 (based on claim 2) and 15 embrace the use of a broader group of Freons, but in this group also are only Freons that are essentially non-smarting to the face, and stable in lather forming. In fact, the entire 21 claims of the patent are so limited."

This portion of the decision has been quoted at length because it furnishes the guideposts by which those whose products or projected products approach that of the "Rise" patent must be guided. A few general deductions may be made based on the vital quoted passage. On the one hand a formula exactly the same as that used by the plaintiffs will most certainly be deemed an infringement. On the other hand, it would seem clear from the language quoted above that the substitution of any

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other propellant for the "relatively small group of Freons" named in the patent would not invalidate the use of an otherwise identical formula. Whether or not a court would decide that there was an infringement where a similar propellant was used in combination with a different soap solution is a question that cannot be resolved by an examination of this decision. A close question like this would be a matter requiring a legal opinion.

With regard to the part of the suit dealing with appropriation of trade secrets, the Circuit Court reviewed and agreed with the findings of the District Judge that the defendant Colgate-Palmolive Company must be held liable for the appropriation and use of the "Rise" formula in developing its shaving cream and also the improved super-fatting process (to give the lather a brushless effect) worked out by one of the original patentees.

The Court found that the original formula had been developed by Foster D. Snell, Inc., an organization employed by one of the patentees. Fine, who had been employed by Snell, was by the terms of his employment contract, obligated not to disclose information obtained in the course of his work. Fine left Snell and offered his services to the Colgate-Palmolive Company and ultimately was hired by them. The Court decided that Colgate used the knowledge of Fine in producing its pressurized shaving cream and the superfatting improvement.

The rules of law relating to appropriation of trade secrets applied in this patent suit are equally applicable to all phases of business practice. It is no defense that an employer did not enter into an open bargain to receive confidential information disclosed to an employee during a former employment. Nor may an employer escape liability for appropriating the business secrets of another by employing one who has been entrusted with the secrets and merely permitting him to make use of such knowledge.

The Court points out that one who knowingly employs the former employee of another may be under a duty to ascertain the extent of the contractual obligations owed by the employee to his former employer. How exhaustive an investigation must be to satisfy this duty was not disclosed. But the Court found the defendant herein fell "far short from being sufficiently avid to ascertain what those limitations really were and have Fine live up to them."

The Court did not sustain the finding of the District Court with respect to the procedure for annealing the polyethylene tubes by dipping them in hot water. It stated that "while Fine learned of this at Snell's and communicated his knowledge to Colgate, the process was one which was well known and cannot be treated as a trade secret or a confidential disclosure." This minor point in the decision is of interest for two reasons; it points up the test that the trade secret must in fact be a secret, and it reassures all in the aerosol field who employ this annealing procedure.

The decision under discussion here may not be a final determination of the rights of the parties to this suit or of the rights of other users of the formula. The defendants, Colgate-Palmolive Company, et al, have indicated that they intend to appeal this case to the Supreme Court of the United States. Furthermore, there is at least one other case pending, that of The Mennen Company v. Carter Products Inc. in the United States District Court for the Southern District of New York, in which the validity of this patent is at issue. Until a final determination is made by the Supreme Court or it declines to hear the appeal, Courts in Circuits other than the Fourth Circuit are not compelled to follow the decision of the Fourth Circuit in pending and future similar cases. However, as a general rule, a District Court will follow the rulings of the Court of Appeals of another Circuit under the doctrine of *stare decisis*.

In closing it should be stressed that the decision, insofar as it relates to infringement, does not affect any products in the aerosol field other than those relating to pressurized shaving creams which when released from the container produce a lather. Other products, including presumably any non-lather shaving soap solution, would not seem to be in danger of being found to be infringers of this patent.★

• No new principles of law enunciated • in Carter Aerosol Shaving Cream De- • cision. • Appropriation of "trade secrets" im- • portant factor in recent Circuit Court • decision.

•

A push-button aerosol dispenser, providing asthma sufferers with an easy, effective way of orally administering a measured dosage of finely atomized medication, has been made commercially available by its developer, Riker Laboratories, Inc., Los Angeles. It is small enough to be carried inconspicuously in the pocket, and reportedly contains medicine enough to provide relief for the patient on 200 occasions.

It is advised that one advantage of the new dispenser is in the measured dosage it permits. Two types of medication are currently available in aerosol containers: one has as its base epinephrine and the other isoproterenol.

Role of the Formulator...

in Aerosol* Insecticides

THE American consumer, aided by the returned GI's experience and his own love of gadgets, adopted with surprising swiftness the pyrethrum aerosol insecticide package invented by L. D. Goodhue and W. N. Sullivan. This invention had several features which made it a very important and useful item. Most important among these features was the unique, quick knockdown paralysis and subsequent mortality of mosquitoes which made possible the control of malaria which heretofore had taken an alarming toll among troops in infested areas. Other features of the new bomb were its extreme portability, its ease of operation and its effectiveness even in the hands of relatively untrained personnel.

After the war the aerosol industry set about finding modifications to make the bomb even more attractive to civilians. Among the considerations involved were many that are common to any consumer item such as appearance, enhanced ease of use and efficiency against a wider range of insects, improved odor, the development of special types for specific uses and last, but not least, modifications of cost.

The last factor is never considered alone, but enters as a component into all of the other factors mentioned. For example, ease of use involves the type of valve and the size of the package. Changes in either of these undoubtedly affect the price. Likewise the efficiency of the spray is a function of its composition and of the particle size of the mist. To some extent the particle size is a function both of the composition and the valve design. All of these things affect the price. In any event, many changes from the original Army package and Army aerosol composition were not only possible, but advisable.

All of these possibilities of change affect, or are affected by, the insecticide formulation and therefore require the services of a formulator. An insecticide formulator is one who puts together in certain proportions the necessary insecticide ingredients, carriers, and solvents to accomplish a desired purpose. In this respect he is similar to a formulator in any other industry who prepares specific preparations of compounds of known properties to achieve certain ends. The various ingredients used are usually well known substances having well understood properties. Various combinations of them under the varying conditions of use result in emphasizing those properties selected as desirable for the purpose at hand.

"Formulation Research" is a term which might often be substituted for "Application Research." The fundamental research which resulted in the invention or discovery of the constituents and the determination of their properties is not necessarily, or even usually, within the province of the formulator, but their adaptation to a merchantable product in certain specific combinations which emphasize their most wanted features certainly is. As Carbide and Carbon Chemicals Company says, in discussing agricultural pesticides in a recent publication** of theirs, "The discovery of a chemical that is effective in killing certain pests — in the test tube — is of no importance at all until it has been put in a form suitable for effective use by farmers and home gardeners."

Many consumer products are the result of "Application Research" or Formulation Research," if you will, which developed certain uses and, in combinations with other additives, certain properties never anticipated at the time of the original invention. The formulator thus plays a very important role in adapting many materials to every day use.

For example, rubber appears in hard combs, soft heels, long-wearing tires, flexible rubber bands, floor tiles, pencil erasers, heavy machinery supports, hot water bottles and a host of other articles because someone knew, or found out, how to formulate it to produce the specific properties necessary for each use. Protective finishes are made in many colors to withstand boiler stack temperatures, sub zero climates, all kinds of weather, to appear dull or lustrous, opaque or transparent; because experts understand how to produce the necessary properties from pigments, oils, extenders, drying agents, resins, thinners and other components. Glass appears in such diverse forms as win-

*For the purpose of this discussion an aerosol insecticide is considered to include all insecticides self-propelled from a pressurized container whether or not they are ejected as a true aerosol mist (maximum particle diameter of 50 microns and 80% of the particles less than 30 microns in diameter) or as a wet spray.

**Chemical Progress, Vol. 2, No. 5—May, 1956. Page 3.

by C. A. Clark
Vice President and General Manager
McLaughlin Gormley King Co.
Minneapolis

dows, enamels, fishing rods, golf club shafts, thermal insulation and lenses because experts know how to formulate it. Petroleum oils come in solid and liquid forms suitable for lubrication of moving parts at high and low speeds, at sub-zero and extremely high temperatures, in massive bearings and in tiny ones because experts have learned how to formulate them.

The list is endless but the point is plain, almost every substance must be used in a certain way for a certain purpose to yield the best results. Anyone with a smattering of knowledge of insecticides knows that you can destroy insects with DDT and Paris green and benzene hexachloride, methoxychlor, arsenate of lead, pyrethrum, calcium arsenate, parathion, chlordane, and other poisons. Probably if he is an agriculturalist or a home gardener, he knows which of these he will select for certain insects, when he must apply it for best results, whether it is safe around his livestock and how it compares economically with the other possible selections.

However, the ordinary user, if left to his own devices with an assortment of active ingredients, would probably be helpless in trying to control his insect population. His efforts, if he is required to rely solely on his own skills, could easily result in plugged sprayers, burned or destroyed foliage, poisoned fish and farm animals, dead pets and sick or dead people, or completely ineffective toxicants with badly infested crops and wasted insecticide into the bargain.

Getting back to the aerosol field of insecticide applications, we have just as many pitfalls for the uninitiated and unwary. An amateur formulator may be able to select, by studying the literature, a good toxicant for controlling the insect or insects he wants to claim on his label. By reading and experimenting he may even select the optimum concentration and recommend the proper dose. He could happen to choose the best mixture of propellants, and that combination of valve type and orifice size, and propellants to non-volatile ratio, most propitious for obtaining the best particle size from the ingredients when sprayed. He may select can linings, eductor tubes and valve parts, which are not corroded or attacked by the combination of the ingredients of the mixture which he has chosen; and he may arrive at a fortuitous combination of solvents from which he has no troubles with precipitation, either when employing cold or pressure filling, or from later crystallization in the can or in small valve parts.

Perhaps the oils and solvents which he chooses are those which give the optimum Peet-Grady values for the toxicants he has selected. Perhaps when he changes his solvents in order to combat complaints about odor, he will again be equally successful in avoiding some of the hazards just mentioned. Maybe he will understand that if he adds a certain insect to his label claims his formulation must be changed, and it could be that he will know how much of what ingredient to add. It is possible that he will stumble on an excellent combination of toxicant and synergist and it may just possibly be that after he has done all these things he will have an effective, attractive product at a competitive price.

However, I am sure that he would more than likely have saved a good deal of grief and frustration and probably even a considerable amount of money if he had left the solution of his formulating problems up to those qualified, not only by formal training, but by a good deal of experience in the field. Competent formulators are aware of the pitfalls mentioned and many more. They have the facilities for testing their trial preparations and determining their good and bad points under the possible conditions of manufacture and use; as well as their biological effectiveness against the insects desired to be controlled. They have at their finger tips knowledge of the behavior of insecticidal aerosol components, they know which are synergistic under certain conditions and, what is equally important, which are antagonistic in certain mixtures.

They not only know what to look for in preparing a formula and the tricks of getting around certain formulation obstacles, but they are competent and expert workmen in designing the best mixture for a certain job. They are cognizant of all of these factors and have a knowledge of sources of supply and availability and are keenly aware of relative price and costs.

As in any other industry, formulation is a matter of expert knowledge

(*Turn to Page* 51)

Formulation of aerosol insecticides, — a task best left to experts. It's an art as well as a science in which there's no substitute for skilled experience and "know how."

MARLA
AERO
SPRAY LUBRICANT
FOR OPEN GEARS

water-skipper
WATER
REPELLENT
CONTAINING MIRACLE SILICONE
KEEP WATER OUT
LET AIR IN

Marshall's
New
PRE-COLOR
SPRAY
MARSHALL'S PHOTO
OIL COLORS
DRIES IN MINUTES

New Products and Packages

"Marla" spray lubricant is a new open gear spray lubricant having high adhesife qualities according to the manufacturer, Rothlan Corp., St. Louis, Mo. The lubricant, packed in a 12-ounce container, eliminates dripping or throw off even in hot or steamy areas and one container is said to cover approximately 25 square feet of surface.

"Water Skipper," a water repellent in an aerosol package, has just been put on the market by Textile Adjuncts Corp., Brooklyn. It will be promoted primarily in the boating field and among hunters and fishermen. It also has a secondary field of use in textiles (See pg. 50). Packaged in 3 lb. cylinders as well as 12 oz. cans.

Marshall's "Pre-Color Spray" readies paper, cardboard, glassy or metal surface for photo-oil colors. The chemical packaged in a pressurized spray container will dull glossy prints, Polaroid prints and magazine pages so that photo-oil colors may be applied permanently. Made by the John G. Marshall Mfg. Co., Brooklyn, N. Y., the suggested retail price is $1.50 per 6-ounce can.

Color-Tone Hair Spray adds temporary color highlights to hair in addition to keeping hair in place. Marketed by Helena Rubinstein. The product currently being introduced contains no lacquer and comes in blonde, redhead, silver-hair and brunette. The four-ounce size sells for $1.75.

Krylon, Inc.'s new product "Rust Release" is packaged in the new larger size container (16 ounce). The formulation is said to penetrate and release rusted bolts, nuts and other parts and also removes corrosion and supplies lubrication at the same time.

"Odor Action," a product of Robert J. Kerr Chemicals, Inc., Park Ridge, Ill., is a new spray packed in a three ounce container and available in five different "luring" aromas: for trout, salt water fish, carp, bass and pan fish, and catfish. The product is harmless to both human and fish life and is legal in all states and territories, it is stated.

Pressure Testing of . . . Glass Aerosol Products

This "Tentative Method For Determining the Internal Pressure of Glass Aerosol Products," prepared by the Aerosol Division, Scientific Committee, Project Committee for Determining Pressures in Glass Aerosols, of the Chemical Specialties Manufacturers Association, has been approved by the Aerosol Division Administrative Committee of CSMA as a "Tentative Method For Determining the Internal Pressure of Glass Aerosol Products."

Introduction

PRESSURE is one of the most important criteria of an aerosol product. For the glass aerosol in particular an increase in internal pressure provides greater latitude in formulation, improved operating characteristics at slightly below room temperatures and the use of less expensive propellant combinations. Beyond a certain point, however, increasing pressure creates a hazardous condition from the standpoint of possible breakage and effects thereof.

Since the I.C.C. requires a metal container for compositions having pressures above 25 lbs. psi-gauge at 70°F, this value becomes the limiting pressure for glass aerosols. There is a very definite trend to limit pressures to 15 lbs. psi-gauge at 70°F. for uncoated glass aerosols and specify plastic sheathed glass for pressures up to the 25 lbs. psi-gauge maximum at 70°F. These figures are also supported by glass bottle suppliers, major fillers and most merchandisers.

No standard method for determing the internal pressure of glass aerosols has been presented to the industry. One is urgently needed. Ideally, such a method should be simple and rapid; suitable for production control. The present method appears to have these qualifications.

Apparatus

1. Pressure Gauge Adapter: The specifications of this adapter are given in Figure 1. The suggested material is stainless steel, although brass has been used.*
   The tapered section is designed to make gas-tight contact with the upper stem of glass aerosol valves by insertion within the stem bore. Where the hole through the upper stem is not circular in cross-section, the use of a rubber sealing washer is suggested.**
2. Pressure Gauge: This gauge is shown as part of the assembly in Figure 2. A two-inch laboratory test gauge is suggested, range 0-60 psi-gauge graduated in one pound divisions. The thread on the gauge stem must match that on the pressure gauge adapter. The recommended gauge is U.S. Gauge Figure 500S, 2", 1/8" lower make connections, 0-60 pounds, specification No. 28208.
3. Constant Temperature Water Bath: The bath should have a stirring apparatus and should be of sufficient size to hold several dispensers. It should be deep enough to allow these dispensers to be completely submerged and surrounded with at least one inch of water. This will require a perforated shelf or a screen above the floor of the bath. The temperature should be 70° ±0.5°F.
4. Barometer: Any standard model.

Procedure

1. Place uncoated glass aerosols in water bath at least thirty minutes before testing. Plastic sheathed aerosols should remain in the bath for at least one hour prior to testing.

* A suggested source for pressure gauge adapters is
  The Modern Machine Shop
  123 North Hazel Street
  Danville, Illinois

** The adapter has been used successfully with valves for glass aerosols made by
The Risdon Manufacturing Company
Precision Valve Corporation
Valve Corporation of America, Inc.

2. Shake dispenser vigorously under water in the bath for one minute. Insert gauge assembly, actuate valve, and shake assembly until pressure reading becomes constant. Record pressure.
3. Remove gauge assembly and shake aerosol under water for one minute. Reinsert gauge system, actuate, and record pressure; shaking as before.
4. Repeat Step Three to obtain a third pressure reading.
5. Record barometric pressure.

Calculations

The three pressures obtained in this procedure will represent a series which diminishes in fairly linear fashion. In order to arrive at the true pressure, these readings are extrapolated to give an "0"th reading, as in the example.

First Reading: 14.0 lbs..psi-gauge
Second Reading: 13.7 lbs.psi-gauge
Third Reading: 13.4 lbs.psi-gauge

Extrapolated "0"th Reading: 14.3 lbs. psi-gauge. This is the true pressure, under the conditions of measurement.

The barometer is then read and the gauge reading corrected to give the true gauge pressure if necessary.

Discussion

Although the apparatus is designed to provide as small an internal volume as possible, still, a certain amount of gas or pressurized liquid is withdrawn from the test dispenser at each reading. For airless samples the change in pressure between readings is due only to a slight decrease in propellant concentration in the liquid phase, as required to reestablish thermodynamic balance. For samples containing air, both air and propellant gas, are withdrawn from the solution to bring the pressure of the expanded head space to new equilibrium condition. Thus the difference of pressure between readings is greater for air-containing samples. In very extreme cases the difference may amount to 2.0 psi. at 70°F. and the pressure differential begins to swing from a linear relationship to a hyperbolic function as a limiting case.

The accuracy of results obtained using the extrapolation method has been checked using a large number of compositions. In such tests the formulations were prepared in metal containers fitted with pressure gauges. When pressures were determined using the procedure described above, variations between the known and extrapolated "0"th reading were 0.2 psi. or less. The greatest error was with products of high air content.

It is felt that results obtained by this test method are accurate to within ± 1.0 psi. at 70°F.

Modification Of Method

This procedure can be adapted to production or routine pressure checking with but slight loss in accuracy.

For a given production run an average figure is determined by experiment for the pressure increment between the "0"th and first readings. This increment is then automatically added to all other consistent first readings throughout the run. Variations of the first reading will in themselves be indicative of production anomalies, such as faulty evacuation of bottles before pressure loading, or the presence of entrapped air resulting from below normal mix temperatures during refrigeration filling operations.

Figure 2: Pressure Gauge of the type suggested for use in determining the internal pressure of glass aerosol products. Photo courtesy General Chemical Div., Allied Chem. & Dye Corp.

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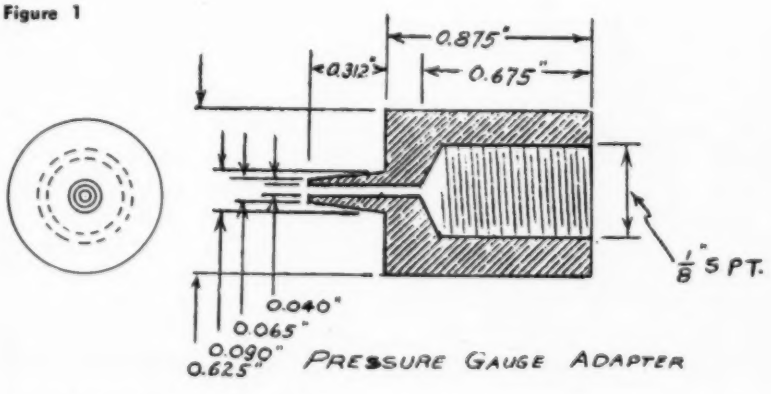
Canco To Process Plate

American Can Company will spend $27,000,000 for installation of new manufacturing facilities at various points in the U.S. to process tin and steel plate. This move will to a major extent eliminate the use of precut sheets and will mean that American Can will take plate directly from the steel company in coils, performing in its own plants the operations of inspection, chemically treating and cutting plate into sheets.

A large new plate processing plant will be built in the Chicago area, bulking 200,000 square feet of floor space and employing 500 people. Additions for installing plate processing equipment will be constructed to present Canco plants at Oakland, Calif., and Tampa, Fla. Plate processing facilities also will be installed in present Canco plants in New York, Baltimore, Los Angeles and Texas. William C. Stolk, president of American Can Co., indicated that this new $27,000,000 Canco program was taken as a step to combat rising tin and steel plate prices.

Figure 1



$25,000

backs the switch to

SULFOXIDE

BR-135 and Dieldrin in new improved insecticide formula!

Exterminator's Challenge

Fame, Fortune Await Bug Who Can Make the Grade

By HAL BOYLE

Kansas City—(AP)—Do you have any little six-legged insect friends who would like to gamble their lives on a chance to win $25,000?

If so, Ralph G. Martin is the man for them to see.

Mr. Martin, president of the Cook Chemical Company, has built his lifelong hatred of bugs into a profitable multi-million-dollar business in insecticides.

Bugs are stubborn creatures. The best known way to kill bugs is to pinpoint them on a hard surface and then hit them a sharp blow on the head with a hammer.

While this form of insecticide appeals to the hunting instinct in man, it is too time-consuming and gives the bugs too great an advantage. By the time you find and hammer down a bug he has already had 5,612,489 decendants, and is probably ready to die of old age anyway.

The trouble with chemical insecticides is this: A chemical that is one bug's poison in time becomes another bug's meat. They develop an immunity.

Martin pioneered in the distribution of DDT and, later, chlordane, which was up to 10 times as strong as DDT. But strains of bugs now have emerged tough enough to survive either DDT or chlordane.

Martin isn't a man to give up easily. His latest weapon is an insecticide called "Real-Kill," fortified with still another chemical, dieldrin, which he says is 28 times as deadly as DDT.

Martin is so convinced of the strength of his new mixture that he has announced a $25,000 reward "for the first bug that does not die after being sprayed" with it.

The rules are quite simple. The contest will run for a three-month period starting in June, when bugs are in their best physical and mental condition. Any bug can enter voluntarily or, if you have one that's bashful, you can enter him against his will.

"There is no humbug involved," said Mr. Martin, who expects thousands of contestants from all walks of bug life in America. "If there is no winner — and I don't think there will be — the $25,000 will be given to a national charity."

Any bug who can stand up to the spray and walk away on his own six feet—or eight, if it should be a spider—stands to collect a lot more than the $25,000. That might turn out to be pocket change.

This news story dramatically emphasizes the faith of Cook Chemical Company in its new formulation of "Real Kill"—containing Sulfoxide.

Sulfoxide — product of S. B. Penick and Company — is an outstanding effective synergist . . . safe . . . non-irritating . . . with a mild, pleasant odor.

For technical information and suggested starting formulas for popular insecticidal sprays, send for your copy of our 12-page bulletin, SULFOXIDE.

PENICK

S. B. PENICK & COMPANY 50 CHURCH ST., NEW YORK 8 · 735 W. DIVISION ST., CHICAGO 10

Consultant's Corner

By Robert A. Foresman, Jr.

My comments this month are meant only for the growing number of small loaders who have no technical staff and a minimum of technical background of any sort in their organization. Research groups and the well established loaders are well aware of everything that follows.

There is probably no field of activity in the business life of our country other than aerosols where there have been so many unknowns surrounding each successful innovation. In the past, good fortune, dumb luck or perhaps a guardian angel has accounted for the commercial potential of more than one product being realized. Contrariwise, bad luck and catastrophe have been present now and then to bring us up short and prove that haphazard preliminary work is a real booby trap. Proper research, to reduce or eliminate these last mentioned occurrences, is possible on the part of nearly any loader. Competitively, it is nearly suicide to bypass it.

When the word research is mentioned, many people have visions of spacious laboratories and shiny glassware with contents bubbling vigorously as white coated scientists make one startling discovery after another. While such a picture might conceivably be an actuality on occasion, it is not a picture that need necessarily typify research.

Research is not things, it is not discovery, and it is not limited to what we may consider science, although these may all be involved. Research is the end result of calculated curiosity, acute observation, analysis of information accumulated by observation — all subject to the discipline of systematic procedure and cause and effect reasoning. In order to follow a complex line of investigation, special facilities and capacities can be required, but just as there are all levels of business activity, so are there different types of research activity. The type of interest to the essentially non-technical loader is in a class with the determination of gasoline mileage on an automobile.

In an average loading plant—large or small, a very significant part of a sound research program can be provided by simply keeping adequate records of easily available data. Frequently otherwise well run operations will fall down on this detail. If this situation exists, there is nothing that can be done about the past, but a constructive program of record keeping can commence at any time—the sooner the better.

A simple research program for an aerosol loader can consist almost entirely of preparation and storage of shelf life and compatibility samples, to be kept on hand with their complete records for observation at a later date by a trained outside technician if and when necessary. Raw material and container suppliers will usually be glad to check the condition of a package and its contents, and they will be doubly glad to cooperate if a complete history for the samples is available. Time is the premium ingredient in nearly all commercial undertakings, and shelf testing requires the passage of time. Properly aged samples are an absolute necessity in any shelf life estimate. My most discouraging moments have come when a problem has been submitted which requires an immediate answer, with no background for decision.

When a loader is approached with a new product, the first thing to find out and record is the entire aerosol history of the product, if any. Next —the customer's idea of the active ingredient level or the proportion of propellant to concentrate and the type of propellant. Usually full formula details will not be disclosed, but the type of base carrier should be recorded such as: alcohol (specify kind and purity or proof), water, oil (specify), or active solvent (specify).

Container and raw material suppliers should be consulted whenever a new product is to be undertaken. In all likelihood they will be willing to test the product in order to give it a clean bill of health as far as shelf life expectancy is concerned, or to warn on possible problems that may be anticipated in connection with its use. These tests should not take the place of your own sample packs, however.

When all possible original information is recorded, the active part of the research procedure can be undertaken. Shelf tests and compatibility packs are within the scope of any filling plant, and should be made as a matter of routine.

Compatibility test packs can very well be made in 2 oz. clear plastic coated Boston Round bottles. Pressures for the product in question may be higher than would be considered desirable for glass packaging, but a good pair of heavy pliable, well fitting cuffed gloves, a face mask and a one-

half inch thick clear plastic screen will provide adequate safety. If the formula as specified by the customer is free of sediment or layering of liquids and it sprays satisfactorily, a duplicate should be made up precisely the same in all details and both stored away for future reference. Storage should be in the dark and arranged so that if one sample accidentally breaks, no damage will be done.

Shelf test packs should be made at the earliest possible moment, so that the maximum storage history will develop before conclusions must be drawn. They should be made up precisely as contemplated for the commercial production, using the same method of filling—pressure through the valve, pressure under the cap, or refrigerated. At least four cans should be the rule, and if storage room is available an even carton packing of twelve or twenty-four is highly desirable.

All data should be recorded, including formula, date packed, storage environment (temperature), package component details — valve and can specifications, method of filling, quantity fill, customer's name, and any other pertinent information. Samples should be coded with a good solvent-resistant ink, paint, or label, and stored away systematically so that units will not be used as give away or demonstration samples. Storage should be arranged for free access to all samples, with due thought to the numbers which will accumulate with the passage of time.

While observation of the packs in detail should be left to a trained technician, all samples packed should be checked for leaks or bulged containers on a regular basis. Dispensing comparisons between fresh material and aged samples can be run to check color, odor, consistency, or dispensability. Records should be entered for each observation, even if only the letters N. C. standing for "no change" are entered.

It is not unusual for an indication of trouble with a commercial pack to be picked up by careful checking of storage samples held by the filler, before any serious trouble can occur. The older a sample pack is in relation to the commercial one the better, but even if they are made at the same time there is a chance that, through careful observation, trouble may be picked up in time to forestall extensive loss.

If more detailed information on any phase of this type of program is desired I shall be glad to try to provide it.★

QUESTIONS from the Editor's Mail

Where answers are not directly available to the editors, opinions will be sought from suppliers or others in the trade. There will be no identification of either the questioner or the source of our answer.

Question: In an article in your May issue (pg. 35) you mentioned toppings and pancake batter put up in an aerosol dispenser. Would you be able to supply the names of companies packing such items?

Answer: The only people who have packed pancake batter, to the best of our knowledge, are Whipette, Inc., Minneapolis. We don't know what they have used as a propellant, if any. A few years ago we believe Reddi-wip also put a pancake batter on the market, but we don't believe they have continued to distribute this product, and to the best of our knowledge it was not aerated. There are at least three concerns who are packaging vegetable oil toppings at present: Delsoy Distributors, Dearborn, Mich., Rich Products, Buffalo, N. Y., and Sta-Whip Corp., St. Louis.

Question: In the May issue of *Aerosol Age*, (pg. 26) cookware sprays were mentioned (silicone to prevent food sticking). Would be very much interested in having the names of suppliers of these products.

Answer: Our records indicate that National Aerosol Packaging Corp., Chicago, had a product called "Free & Easy Cookware Spray" on the market in Sept., 1954, which was a silicone formulation for spraying on pots and pans to prevent sticking of food. Some time later another firm, Casa Products, also of Chicago, started marketing a similar preparation. Don't know if either product is still available.

We are also checking with Dow Corning, Midland, Mich., to see if their "Slipicone" aerosol spray is being recommended as a cookware spray.

Question: We are interested in commercial greenhouse aerosols using parathion and azobenzene, packed in cylinders of approximately 1.8 kilo contents. Would you be kind enough to let us know where we can buy an aerosol filling device and obtain instructions on how the operation is performed?

Answer: Name and address of this correspondent are available to any interested supplier.

Question: Have been working on a product and have found that lined cans will not work. Are unlined cans available?

Answer: This inquiry referred to container manufacturers represented in the area.

Question: We are interested in arranging to produce an aerosol bandage spray in our country (Norway). Would like to make arrangements with some manufacturer of a product whose trade name is recognized and well-known in the United States to produce and sell same on a license basis here?

Answer: Name and address of this correspondent are available to interested parties.

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D&O's Moth Aerosols

The *Dodge & Olcott, Inc. News* for June reports on two new aerosols developed by the company's perfume laboratories. Called the closet cedarizer and moth spray, the new sprays employ Strobane and Perthane as the active insecticide.

Noting the desirability of woody fragrances in such products, D. & O. developed two new cedar fragrances, Cedar 40-R-6484 and Cedar 40-5-6-6485. Aerosols prepared with deodorized kerosene, according to suggested formulae, last in closets for periods exceeding 30 days.

The formulae are as follows:

No. 1

5%	Strobane
2%	Fragrance
33%	Amsco Odorless Mineral Spirits
60%	50:50 (11 & 12)

No. 2

5%	Perthane
2%	Fragrance
33%	Amsco Odorless Mineral Spirits
60%	50:50 (11 & 12)

Strobane is a product of B. F. Goodrich Chemical Co., Cleveland; Perthane of Rohm & Haas Co., Philadelphia.

Propellants for Food Aerosols Tested

THE Spring, 1956, issue of *Aerosol News*, publication of the Kinetic Chemicals Division of du Pont, discusses developments in propellants for pharmaceutical and food aerosols. Earlier tests by Du Pont, the Underwriters' Laboratories and the U. S. Bureau of Mines have already defined the low toxicity of "Freon" propellants. Additional test work has now been completed by Du Pont's Haskell Laboratory of Toxicology and Industrial Medicine where the application of propellants into the eyes of rabbits was investigated.

"Freon-11", "Freon-12" and "Freon-114" were dissolved individually in Nujol and the latter two were sprayed into rabbits' eyes from an aerosol container at a distance of about 6 inches. The "Freon-11" dissolved in the Nujol was instilled into the rabbits' eyes at a dosage of 0.1 ml. All the materials, including the Nujol controls, produced a mild irritation (conjunctivitis) which lasted less than 24 hours for "Freon-12" and "Freon-114" and less than 48 hours for "Freon-11." None produced, after this single treatment, any detectable damage to the cornea.

In topical uses, the report continues, it should be realized that the application of a fluoro chloro hydrocarbon propellant in liquid form to skin surfaces can cause a marked lowering of the temperature of the skin. Careless application of excessive amounts of a low boiling propellant could result in harm, since freezing might occur. In addition, it must be remembered that a product dispensed by the aerosol method usually is very finely divided and that activity of pharmaceutical type products may be quite different in this physical state than when the particle size is larger or when the active ingredient is dissolved in a solvent. Finally, since the application of chemicals or drugs through use of the aerosol principle may raise new problems, drug manufacturers contemplating packing their products in aerosol form are advised to present comprehensive information on their products to the Food and Drug Administration, so that the latter will have a chance to object if they think the product would be unsafe.

The idea of dispensing food products with liquefied propellant also offers many interesting possibilities, the report notes, but much investigative work must be carried out before the fluorine-based propellants can be recommended for such use. As the first step in the present program of studying the behavior of propellants in foods, the Haskell Laboratory has investigated the toxicity of "Freon-12" and "Freon-114" by ingestion into animals. These products were dissolved in an edible oil at close to their maximum solubilities and were fed to the animals. Up to the point where the edible oil controls produced diarrhea there was no perceptible effect on the animals.

Such propellants for the application of food products should be sufficiently stable so that at most only trivial amounts of fluoride ion would be formed during the normal shelf life of the edible material. Since foods vary greatly in their chemical compositions, a comprehensive test program is required to simulate conditions, which might occur in practice. The Kinetic laboratory is carrying out a program of such tests. A propellant for a food use, of course, must not only be stable but must not impart an undesirable taste and should dispense the food in a satisfactory and attractive physical form.

It is too early to draw any conclusions in regard to the suitability of "Freon" propellants for food products, the du Pont company concludes at this time. Because of the necessary storage periods of long duration and the meticulous care required to observe even the most minute decomposition of the propellants, it will be many months before any positive position can be taken with respect to the possibility of the fluoro chloro hydrocarbons being acceptable propellants for use in food aerosols.

Literature Reviews

Aerosol Perfumery Problems by Jack Pickthall. *Soap, Perfumery & Cosmetics*, London, Vol. XXIX, No. 5, May, 1956.

The author, chief chemist at Polak & Schwarz, Ltd., London, England, discusses basic principles of how aerosols work and presents requirements and formulas for some aerosol products such as handkerchief perfume, toilet water, after shave lotion, sunscreen preparations, etc.

Smelling a perfume from a smelling-slip and from a sprayed aerosol are two different matters, according to Mr. Pickthall. In a handkerchief perfume, the alcohol acts as a vehicle to "lift" the perfume. Throughout the life of the perfume the examiner is conscious of a subtle change in odor. No perfume consisting of complicated mixtures of ingredients remains constant in odor during evaporation. The nature of these changes determines the excellence of the creation and is the perfumer's science and art.

But in an aerosol, all of the blend literally "explodes" into the air, with a simultaneous release of molecules, so that the bouquet is received by the nose in its entirety.

Toilet water perfuming problems are similar to those encountered in handkerchief perfumes, with this added complication: excessive amounts of water are present.

With shave creams, perfume is, to all intents and purposes, emulsified with the propellant in the soap solution. The perfume in this case must mask the odor of fatty acids and lanolin. Also, perfume is needed to give the product a pleasant odor of its own. One problem with emulsions based on triethanolamine is discoloration.

With the advent of aerosols, a new approach to the problem of fixation is necessary. Many solid products responsible for fixation effects can't be used due to instability; or their presence leads to insolubility problems. Also, some of the usual fixatives tend to promote irritation on the skin when sprayed.

Pressure Packing Overseas

Dr. Tom C. Clark of Druk-Pak, Zurich, Switzerland, reviews the aerosol industry in Switzerland in this installment of his monthly column. High retail prices are the big factor limiting expansion of Swiss aerosol output, —currently about one-half million units.

ZURICH'S Bahnhofstrasse is world-famous for its fine shops and excellent wares, surpassing even Faubourg St. Honoré in Paris and rivalling Madison Avenue. Here you can buy everything, from the finest jewels, watches and gowns to the best in world aerosols. We made an aerosol shopping expedition on a recent visit and found much of very definite interest.

One of the largest Department Stores was featuring U. S. wares with an exhibition titled "So Lives One in America," currently the talk of the town. Despite custom duties, freight, red tape, etc., the goods mostly undersell locally produced products and their quality astounds Europeans.

The Kraylon touch-up colors were well displayed and created much interest, for aerosol paints are a rarity over here. The price on the label said 98 cents and it was marked at Swiss Fr. 5.25 or $1.23, a reasonable mark-up, considering all factors. Also for sale were stove cleaners, hand cleaners, moth-proofers and a furniture polish, all U. S. products.

Europe was also represented with a carbon tetrachloride fire extinguisher from Brussels in a 12 ounce Crown can with an ARC no-clog valve. Truly an international product, it sold for Sw. Fr. 9.90 ($2.40), with a Belgian franc price of 140 ($2.80) printed on the label (something went wrong there). There were some German insecticides and air-fresheners, the odors of which seemed to cancel each other out. "Air Fresh," Swiss filled, still costs Sw. Fr. 5.05 ($1.17) for a 6 ounce can and Sw. Fr. 8.05 ($1.87) for 12 ounces, but a Swiss "Pandora" air-freshener was priced at Sw. Fr. 3.95 ($0.92). Competition is increasing.

Another large department store featured on the cosmetic counter a new plastic-coated 8 oz. bottle (French bottle, Swiss filled) of eau de cologne at Sw. Fr. 15.50 ($3.60), luxury stuff but reportedly selling well. The valve alone, which screws off (sometimes even when it should not), comes at Sw. Fr. 5.50 ($1.28) and refills with an aluminium pierceable cap at Sw. Fr. 10. ($2.32). It did not seem to us this was a true aerosol. The spray was too wet, the pressure too low. We believe nitrous oxide is used for pressure, and will investigate, reporting later when we have a chance to visit the filler in Geneva.

Zurich has more beauty shops than there are filling stations in the average U. S. town and they seem always full. Both beauty shops and drug stores feature a variety of aerosols. The PVP hair fixative has gone over in a big way. Foam type shaving creams are to be had in a variety of trade names, all imported. In fact, one looks hard for Swiss products from Swiss manufacturers or fillers. Their leading Swiss cosmetic filler does not even put his name on the 8 ounce bottle of eau de cologne mentioned above. Although DDT was discovered in Switzerland by Geigy in Basel, there are no DDT aerosol insecticides on the market in Switzerland and Geigy, itself, does no aerosol filling in Switzerland although its aerosol insecticides are on the market in France, Germany, and Italy. Even so the Swiss consumption of aerosols last year was probably well over 500,000 units.

Europe's first true contract loader, Aerosol Service A.G., is located in Riehen, near Basel. Last year, they branched out with a station in Germany and have a leading position in the field, filling both cold and pressure. There are, in addition, four other filling stations in Switzerland, two of which will take on contract loading. The other two fill only the firm's own products.

Four can manufacturers have gone into the aerosol field, two with extruded aluminum cans and two with a seamed tin-plate can, both price-competitive behind an adequate tariff. No valves are produced in Switzerland, but two firms are producing laboratory and filling equipment and were the first in Europe to enter this field. Their machines use the pressure system, satisfactory for very small runs and starting operations. In addition, one of them maintains a laboratory service and furnishes concentrates for aerosol products to other European fillers, the only company in

Europe in the concentrate business.

As a result of this interest in aerosols, the machines, contract loaders, etc., Zurich has become a European center for aerosols and aerosol development. Visitors arrive weekly from all over the world, plying questions, seeking samples, obtaining quotations and watching operations. The aerosol idea is catching on in the world's smaller countries, as these numerous visits attest, and the Swiss pressure machines are filling this need. Most of their equipment is manually operated but this is less important than it would be in the United States because of the relatively low labor rates in these countries.

As in the other European countries, the big problem limiting expansion of the Swiss aerosol industry is high retail prices. They are too high for the standard of living. And they are not high because of manufacturing costs, costs of raw materials or high profit taken by the manufacturer, but only because of antiquated merchandising methods and the exorbitant mark-up of the middle-men. There are three methods of merchandising aerosol products in Switzerland: Department stores, the regular shops and Migros. The department stores and Migros have reasonable mark-ups and intelligently rely on volume turnover at a low price. Migros, with about 150 stores throughout Switzerland, does not carry a line of aerosols. A couple of years ago, they got stuck with a lot of bad cans and poor valves and have not got back into the business. But if you sell to the Swiss department stores or Migros, you do not sell to the regular shops, that is, they will not buy from you. They still run these shops through cartel tradesmen's associations under a system which dates back to the middle ages. The boycott goes on quickly. It takes courage to do business and no one wants to take a chance.

Another peculiar Swiss aversion is their suspicion, in this field, of Swiss products with a Swiss label and also their unwillingness, except for Migros, to put out a product under their own name with their own label. This, however, is a stumbling block of the tradesman, not the consumer, as Migros has shown. Give the consumer a good product at a reasonable price with your own name on it and he will come back for more. However, this goes against the interests of the middle-men's selling organizations and the filler who works for the department stores or Migros could not have his products handled by the middlemen for sale to the regular stores.

Direct selling by the manufacturer is rare in this line. Selling is done through selling organizations most of which are already engaged with an aerosol line. This further holds back expansion, but despite all these road blocks and obstacles, there is a growing interest among product manufacturers for filling equipment to fill their own products on their own premises.

In a couple of years, with a population of around 5 million, we believe Swiss aerosol consumption will easily reach 2 million containers and maybe more. Two years ago, there was only one filling station in Switzerland — now there are 5 and more may open this year. They all start in a very small way, for they are very conservative. If they could find courage for some new selling practices or selling organizations, the boom would be on. When Migros puts aerosols on their shelves — and they will, in due time — the race will be on.★

Brickbats and Bouquets

(*from page 6*)

I have read your first issue with a great deal of interest and enjoyment. In many previous articles and in your first issue too reference is made to the original aerosol unit made during World War II. I am not questioning the validity of this statement, however, most people forget or are not aware of the actual author of aerosol units, one now deceased named Eric Rotheim. Documentary information discloses that Rotheim, a Norwegian, actually devised aerosol bombs starting about 1930. If you are interested in publishing some of the little know facts of the origin of aerosols, I will be more than pleased to do some research and supply you with this information.

Albert Edelstein
MANUFACTURERS REPRESENTATIVE

We have received Volume I Number 1 of *Aerosol Age* with which we are greatly pleased. We request that you send twelve additional copies to us.

L. A. Piper
CONTINENTAL CAN CO.
New York City

I received the first issues of your new publication and enjoyed it very much. The articles gave a good briefing on the subject and the advertisements were interesting. It is trusted that the aerosol industry and your publication will go on to even higher accomplishments.

W. N. Sullivan
U. S. DEPT. OF AGRICULTURE
Washington, D. C.

We thank you for sending us the first issue of *Aerosol Age*. It is a most attractive and very interesting magazine. We have asked our book store to arrange a subscription. We congratulate you on the new publication.

H. Lang
I/S NIVEA
Copenhagen, Denmark

As manufacturers of aerosols in this country, we find the information in your new publication, *Aerosol Age*, most readable. Please enter our subscription.

In your first issue, the article by Dr. Morris Root mentions that at the present time no firm has put antibiotics into an aerosol pack. We should like to bring to your attention the fact that we fill Chloramphenicol in an aerosol for the treatment of foot rot in sheep.

Although the aerosol industry in Great Britain is still in its infancy, we forsee an increasing volume of business developing during the next three years.

E. S. Harrison
WALTER GREGORY & CO.
Wellington, Somerset, England

We think your first number was well put together. Since you ask for suggestions, may we offer one. If possible, keep your editorial articles all in one spot rather than continuing them. If it is necessary to jump them, then keep the continued part on just one side of the page. If this is not done, it is impossible to make tear sheets of certain articles without getting a second copy of the magazine.

We would like to secure a copy of *Les Aerosols* which you mention (Pg. 77 May issue). Will you advise us the price and the address of the publisher?

R. F. Merrill
YARDLEY OF LONDON (CANADA) LTD.

We sincerely trust that your new *Aerosol Age* will give us more knowledge of the aerosol field in the States than we have hitherto acquired. If you have anything to recommend, in addition to *Aerosol Age*, we likewise want to have it. We have already entered into an agreement with Aerosol Research Co., Forest Park, Ill., for technical cooperation. We will have the right to produce their valves in our country and be sole agents for them not only in Japan but also in the Far East.

K. Itoh
KING AEROSOL CO., LTD.
Osaka, Japan

1 **Aerosol Packaging Increases Number of Users!**

2 **Aerosol Products Are Used More Frequently!**

Market Your Products -Get a 4-WAY

From retail stores across America comes the answer to why so many "sleeper" products suddenly are best sellers when packaged as aerosols: *they get a four-way sales boost!*

A recent survey* of leading cosmetic and fragrance manufacturers reveals that increased sales and an expansion of markets result repeatedly with the change to aerosol packaging.

Here's what they are saying:

"Our new aerosol cologne is being used in ways and by people we could never sell before," one enthusiastic manufacturer reported.

"There's less time between repeat purchases" said another. "Women use our aerosol package more often than they used the same product in liquid form," a third reported.

All this means just one thing to smart marketers—you're missing today's best bet for stimulating sales if you haven't considered aerosol packaging for your product. Last year's 240-million-unit aerosol sales are proof of that.

*Conducted by a leading drug and cosmetic trade magazine

If you have products that can be sprayed, brushed on, dusted or daubed, the revolutionary aerosol packaging technique may offer you a tremendous potential for profit. Investigate now while the field is still increasing and merchants are eager to feature anything new in aerosols.

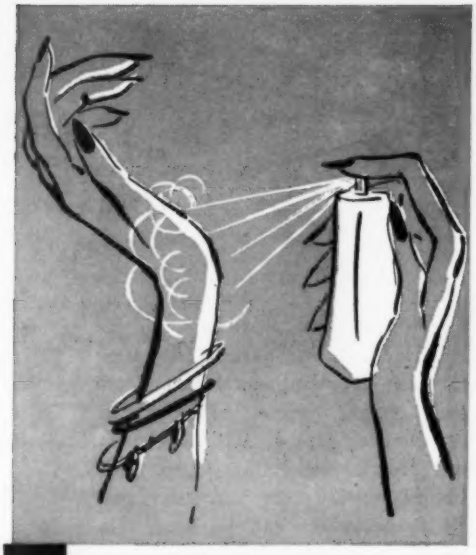
For the best aerosol products ...USE

genetron®

PROPELLANTS

...the right propellant for every aerosol need.

3 **Aerosol Products Are Used More Freely Each Time!**



4 **Aerosol Products Are Used in New Ways!**

as Aerosols

SALES BOOST!

Here's Free Help!

If you want technical guidance in developing the right propellant and formulation for your product, see General Chemical. If you want information on aerosol containers, valves, packaging equipment, contract fillers, you can get it from General Chemical. As the producer of "Genetron" propellants, we have the specialized experience and the research and testing facilities to help you find the right answers to your problems.

And, you don't have to invest a cent in special equipment or personnel to enter the profitable aerosol market. There are contract fillers near you who will take over the entire job for you quickly, economically.

Write now for list of firms equipped to fill aerosols with "Genetron" propellants.

Interested? Then send today for illustrated booklet packed with fast facts on how to market your products as aerosols: "How to Push Up Profits With Aerosols." Write to:

"Genetron" Department

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Basic Chemicals for American Industry

NEWS of Pressure Packaging

Cont. Can Exec. Retires

Oliver G. Jakob, Eastern Div. sales manager for Continental Can Company retired from active duty with the company June 1. Mr. Jakob, who has been a well-known figure with Continental for many years, has been 49 years in the can business. He started as an office boy with American Can Co. He joined Continental 32 years ago.

Aerosol Foghorn

Meant for amateur yachtsmen with small pleasure craft, an aerosol foghorn is being marketed, and sold in New York through Abercrombie & Fitch. A one-cylinder can containing one pound of propellant produces more than 300 two-second warning blasts of a decibel intensity of 110 and 115. A horn can be heard more than a mile over open water.

The unit, developed by Falcon Alarm Co., Summit, N. J., consists of a valve and horn assembly and a can of gas. A needle valve in the assembly automatically punctures the seals on the replacement cans. A toggle valve operates the horn and this may be locked into position for sustained emergency signalling.

Beard Named Res. Director

Appointment of Walter C. Beard, Jr. to the newly-created position of director of research was announced last month by Risdon Manufacturing Co., Naugatuck, Conn. Mr. Beard was previously manager of the valve division.

Pennsalt Adds Sales-Service Men

David S. Tillotson and Peter Pawlyk have been named to the technical division of Pennsylvania Salt Mfg. Co. to do sales-service work on the company's new "Isotron" aerosol propellants and refrigerants.

Mr. Tillotson, who was chief chemist of the aerosol division of John C. Stalfort & Sons, Baltimore, will specialize on applications of "Isotrons" in aerosols. Mr. Pawlyk formerly with B. R. Mallory Co., Indianapolis, will do sales-service work in the refrigerant field.

David S. Tillotson

Canine Odor Dispelled

"Odor Off", a new deodorant spray for dogs, is a product of Whitmire Research Laboratories, St. Louis. Available in a 6 or 12 ounce container, the deodorant is said to have other good effects such as reduction of skin bacteria, control of dry skin conditions, and supression of doggy smells in kennels and sleeping quarters.

Dow To Manufacture Propellants

Dow Chemical Company of Canada will shortly be in production on fluorinated hydrocarbon propellants for use in aerosol packaging at its plant at Sarnia. Preliminary engineering for the propellant plant is already underway.

Supermarket Show in Sept.

National Super Market Non-Food Exhibit will be held at the New York Coliseum, Sept. 10-13, the second annual showing. Exhibitors will include manufacturers of health and beauty aids, cleaning products, housewares and appliances, soft goods, baby needs, paper specialties, toys, garden supplies, etc.

Forums and clinics on marketing, packaging, display, advertising and inventory are to be held.

Bridgeport Board in Calif.

Two plants of the recently-acquired Hunter Douglas Aluminum Corp. were toured by the board of directors of Bridgeport Brass Co. at its monthly meeting May 28, in Riverside, Calif.

Programs for expansion have been approved for Hunter Douglas since its sale to Bridgeport last February. Construction of additional equipment for continuous casting and rolling, a 3,500 ton cold extrusion press with a building to house it, and purchase of ten acres of land adjoining the site of Plant No. 2 have been approved, costing 3-4 million dollars.

Use of facilities of Bridgeport's Adrian, Mich. plant in combination with Hunter Douglas operations at Riverside and in Flemington, N. J. are being studied.

1958 Packaging Exposition

The American Management Association has already announced its plan for the 1958 National Packaging Exposition, which will be held at the New York Coliseum, May 26-29. The 1957 show is scheduled for the International Amphitheatre in Chicago, April 8-11. This year's exposition, held at Convention hall, Atlantic City, N. J., attracted an attendance of 28,000 visitors.

Milwaukee Aerosol Gains Presage Bigger Than Expected '56

BASED on results of the *Milwaukee Journal* Consumer Analysis for 1956, the national aerosol market should break through the top figure of 250-275 million units generally predicted by suppliers and those allied with the aerosol field for 1956. This 33rd annual report contains market-by-market tabulations on 150 product classifications covering thousands of brands, including hair sprays and shave foam products.

The Question:

Do you buy a hair-spray in pressurized cans?

In 1956, 28.6 per cent reported that they did, compared with 15.7 per cent reporting affirmatively in 1955. Total number buying in the 1956 inquiry period was 87,144 versus 46,589 in 1955. The number of brands purchased was considerably higher in 1956 — 38 different varieties — as against 16 types in 1955.

Regarding individual brands, a significant increase was posted by Revlon, garnering 13.8 per cent of the total market in 1956, up from 4.8 per cent in 1955.

The Question:

Do you use a shaving cream that comes in pressurized cans?

In 1956, 24.2 per cent reported that they did, compared with 19.0 per cent in 1955. Total number of buyers climbed from 56,392 in 1955 to 73,737 in 1956. The number of brands did not increase very much: 29 varieties in 1956 and 26 in 1955.

Popularity of "Aero Shave" in the Milwaukee market was reflected in a better-than 100 per cent jump in use, from 4,060 users in 1955 to 9,438 in 1956. Almost the same percentage increase was shown by "Mennen's Foam." "Rapid Shave" continued to lead the market, with 28.1 per cent of all users preferring this brand. "Rise" was second with 15.9 per cent.

The sharp upturn in number of buyers of hair spray — from 46,598 to 87,144 and the important gain in number of buyers of shave foam — from 56,392 to 73,737 would seem to indicate that estimates of a market for aerosols in the range 250-275 million for the country as compared with 236 million in 1955, may not be sufficiently optimistic. Unless other aerosol products suffer a setback, unforeseen at this moment, the industry could easily score higher-than-expected total sales in 1956.

A campaign for QWIP, a pressurized cream whip, will shortly get underway on 85 TV stations in 83 national markets. QWIP is a product of Avoset Co., San Francisco.

Hair Spray in Pressurized Cans

Consumer Preference for Leading Brands in Greater Milwaukee

Brand	*Per cent of all households buying hair spray in pressurized cans who use each brand.* 1956	1955	*Total number of Greater Milwaukee households using each brand.* 1956	1955
Helene Curtis	65.7%	71.2%	57,254	33,178
Revlon	13.8	4.8	12,026	2,237
Ariel	5.4	5.1	4,706	2,376
Charles Antell	2.3	1.0	2,004	466
Avon	2.1	...	1,830	...
Sparkling Gold	1.1	...	959	...
Don't Know	.5	3.3	436	1,538
†Miscellaneous	9.5	14.6	8,279	6,805

† Including all brands used by less than 1% of the total buyers of this product (1956, 32 brands).
Brand preference totals: 1956, 100.4%; 1955, 100%.

Shaving Cream in Pressurized Cans

Consumer Preference and Dealer Distribution of Leading Brands in Greater Milwaukee

Brand	*Per cent of all men buying shaving cream in pressurized cans who use each brand.* 1956	1955	*Total number of Greater Milwaukee men using each brand.* 1956	1955
Rapid Shave	28.1%	33.5%	20,720	18,891
Rise	15.9	20.6	11,724	11,617
Aero Shave	12.8	7.2	9,438	4,060
Old Spice	7.6	6.1	5,604	3,440
Mennen's Foam	6.2	4.4	4,572	2,481
Gillette Foamy	5.6	3.4	4,129	1,917
Burma Shave	5.0	8.8	3,687	4,962
*Barber Shave	2.9	...	2,138	...
Po-Do	2.5	2.1	1,843	1,184
Instant Lather	2.1	2.1	1,548	1,184
*Avon	1.9	...	1,401	...
Noxzema	1.0	1.5	737	846
Squibb Lather Foam	1.0	...	737	...
Don't Know	2.7	3.6	1,991	2,030
†Miscellaneous	5.6	7.2	4,129	4,060

* Used by less than 1% in previous years and therefore included under "Miscellaneous" in those years.
† Including all brands used by less than 1% of the total buyers of this product (1956, 16 brands).
Brand preference totals: 1956, 100.9%; 1955, 100.5%; 1954, 100%; 1953, 100.3%.

Compiled and Published by *The Milwaukee Journal*

New Poison Ivy Aerosol

Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y., has just started marketing a new aerosol spray preparation for the relief of itching and pain due to ivy and oak poisoning, hives, insect bites and other minor skin irritations. Sold under the name "Rhulispray," it is packed in a three-ounce aerosol dispenser. Active ingredients are: zirconium oxide 1%, menthol .009%, camphor .098%, calamine .98%, benzocaine .98% and isopropyl alcohol 9.5%.

American Can Sales Divs.

American Can Company has just established four container divisions along product lines in its general sales department. The general managers in charge of the newly formed product divisions are as follows: nonfood containers, William F. Fay; food containers, Roscoe M. Roberts; beverage containers, George F. Henschel; fibre and plastic containers, Donald Poinier.

Edward K. Walsh, recently named general manager in charge of the firm's nation-wide sales organization, has announced the appointment of William E. Vaughn as assistant general manager of sales.

E. Arden Has Suntan Spray

Suntan lotion in an aerosol container is now being offered by Elizabeth Arden, New York. The nonbreakable unit contains 5½ ounces of a non-greasy, fragrant, waterproof, non-inflammable product.

New Tube Manifold Plant

The Tube Manifold Corporation, North Tonawanda, N. Y., fabricators of tubular products, announces the opening of a new plant covering 82,000 sq. ft. manufacturing space. New equipment has been installed including latest type automatic hydrogen copper brazing furnaces, a complete conveyorized materials handling system and other facilities to provide a continuous flow, one-floor production layout, according to Dean M. Rockwell, vice president and general manager.

The Tube Manifold Corporation, established in 1920, is a major supplier of disposable and refillable containers for the aerosol field as well as for other industries requiring pressure cylinders.

Bon Ami Window Cleaner

A new aerosol window cleaner is being offered by Bon Ami, New York. The product is being test marketed in the New York area and will shortly be placed for national distribution.

Continental Filling Corp., Dansville, Ill. are packaging the product. Containers for pilot plant production are being supplied by Crown Can and valves by Risdon.

Cont. Can In Merger

Continental Can Co., Inc. the nation's second largest metal container producer, and Hazel-Atlas Glass Co. have completed plans for a merger, the two companies recently announced. The merger will make Continental the only container manufacturer producing packages in all major materials, including metal, glass, plastics, and paperboard; and is expected to boost annual sales volume up over the $750 million mark.

Tully Named by Canco

John A. Tully has been appointed Boston district sales manager by American Can Co., it was announced last month by William S. Beard, assistant manager of sales for Canco's Atlantic division. Mr. Tully succeeds Frederick D. Tower, who has been transferred to the general sales office in New York.

New Aerosol Shoe Polish

"Shu-Glo," a new aerosol shoe polish, packaged in a 12 oz. container by National Spray Can Filling Corp., Brooklyn, for Spray Mist, also of Brooklyn, features a new "vapor phase body" valve which makes it possible to use the can in any position. The valve is made by Precision Valve Corp., Bridgeport, and the container by Crown Can. Sterling Seal make the cap.

The shoe polish was test marketed in New York City in May, 1956 in such department stores as Macy's, Gimbels, etc. The product was very well received, resulting in a sale of 60,000 during the test. National distribution is now being started with advertising on radio and television.

The polish is a silicone base product, said to dry in about one minute, and will not peel.

Reynolds' Marketing Stencil Ink In Aerosol Package

Reynolds Ink, Inc., Cleveland, offers an aerosol stencil ink in eight different colors, including aluminum. Reynolds also offers an aerosol for blocking out old stenciling, and permitting the original container to be restenciled. The second product is marketed as "Stencil-Kover." Both come in 12-ounce size cans, retailing at $1.98.

Hair Spray Problems Aired at Cosmetic Chemists Meeting

H. R. SHEPHERD, Aerosol Techniques, Inc., Bridgeport, Conn., discussed several important problems in the formulation of hair sprays at the Society of Cosmetic Chemist's semi-annual convention, May 18, Hotel Biltmore, New York.

Six film-forming materials now in commercial use, or soon to be included in formulations, were listed: shellac, PVP, ethyl cellulose, lanethyl, PVMMA and PVPMA. Mr. Shepherd limited his discussion to shellac and PVP types. A satisfactory hair lacquer of the shellac type must include a water insoluble material and an anti-hardness material. Two compounds, ethyl glycol-dilaurate and crystalline castor oil, the first as an emulsifying agent and the latter as a plasticizer, were the first to be added to shellac type formulas and the type has still survived. Also, lanolin should be added to meet consumer demand for a "lanolinized" product.

The basic problem in shellac type lacquers is the shellac itself, Mr. Shepherd said. Being a natural product, it isn't always consistent, and precipitation is likely to take place during aerosol filling operations or in storage. There is a delicate balance between the propellant and the alcohol, and between the concentration of shellac and propellant.

The speaker recommended the preparation of a super concentration of hair lacquer, at 30 per cent solids, this "super batch" to be stored for a week before diluting for use in the aerosol filling operation. The concentration of solids is 2-3 per cent in hair lacquers; the modifiers used represent about 10 per cent of the shellac.

Mr. Shepherd advised that no method had yet been developed for objectively screening hair lacquer preparations and that testing work must still be done by the hairdresser.

Three years ago, PVP came into the picture and presented new opportunities for better formulations; however, one important problem with the product is its sensitivity to moisture. Listed as effective in modifying humidity characteristics of PVP were: oleyl alcohol, cetyl alcohol, Santicizer C-15 and B-17. The modifiers were selected as a result of experimental work at Aerosol Techniques. The speaker also cited the work with PVP films of General Aniline and Film Div. The fatty alcohols will represent 10-25 per cent by weight of PVP and the PVP represents 2-2½ per cent of the total weight of complete product.

Considerable study is being done on men and children's hair sprays, both at Aerosol Techniques and in other research laboratories, the speaker indicated. Formulations for this purpose will contain only 50-75 per cent of the total weight of the women's preparations: women in general have more and thicker hair than men or children, and different hair characteristics are desired.

A procedure recommended for screening hair preparations in the laboratory involves treating swatches of hair, which have been wrapped around a rod and secured with a pin curl. These assemblies are then suspended in various atmospheres and humidities. Another laboratory technique is the evaluation of films which is done by spraying a glass plate with the test product and simply noting tackiness when touched by a wet or dry finger.★

Ownership Change at Prec. Valve

Precision Valve Corporation, Yonkers, N. Y., has just acquired the stock interest in the company owned by Frederick Lodes, one of the founders and a principal stock holder of the company.

Mr. Lodes, who had been secretary-treasurer of Precision Valve, will continue to be active in promoting the interests of the company in the foreign market. More specific details on his future plans will be forthcoming at an early date, he indicated. He retains his one-third financial interest in the foreign rights to the basic patents under which Precision valves are manufactured.

John J. Baessler is president of Precision Valve Corporation and Robert H. Abplanalp is vice president.

New Aerosol Shipping Rules

The Bureau of Explosives, Assn. of American Railroads, New York, has filed suggested new regulations for the shipment of aerosol containers with the Interstate Commerce Commission. It was anticipated that the ICC would release the text of the new proposed regulations some time before the end of June. A twenty day period will follow during which time any interested party may present objections or suggestions for modification of the regulations before they become effective.

Propellant Price Is Lowered

The Kinetic Chemicals Division of E. I. du Pont de Nemours & Co. has reduced prices on its "Freon" propellants in the seven Western States by seven-tenths of a cent per pound. The new prices, effective with shipments on May 26, lower costs to buyers in Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington.

The new schedule narrows the differential between du Pont's propellant prices in the seven Western states and the balance of the country in a move to encourage the aerosol industry to use west coast loaders for their western operations. Production of du Pont's line of propellants will begin in September '56 at a new plant nearing completion at Antioch, Calif.

Klenzade Is Rhodia Agent

Klenzade Products Co., Beloit, Wisc. has been appointed sales and service representative for "Alamask" industrial deodorants. Rhodia, Inc., New York, manufacturer of the products, said that Klenzade will be responsible for the central states sales territory.

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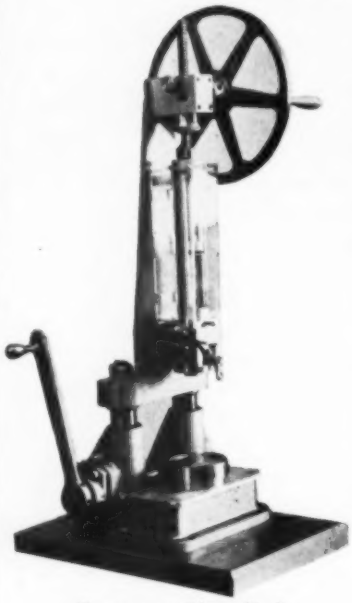

Foresman Liquefied Gas Manipulator

APPARATUS AVAILABLE

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Hand Operated Vial Capper
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Dead Stop Indicator for Karl Fischer Titrameter
Density Units
High Pressure Test Bombs
Can Sampling Units — Piercing or Valve Actuating
Pressure Gauging Unit — Pressure Balance or Water Filled
Flammability Set
Test Ovens — Standard or Custom Built
Instantaneous Chiller Units — Mechanically Refrigerated
Electric Hot Water Test Bath Standard or Custom Built
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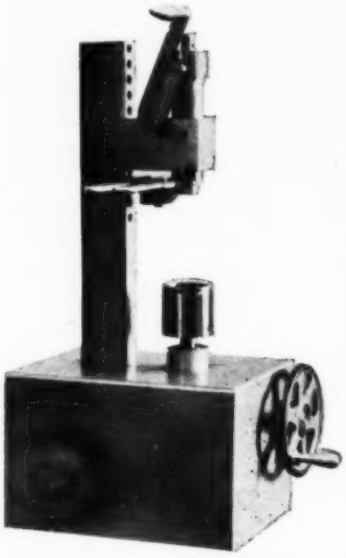

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All Products manufactured to our own Designs, Formulations and Patents. Valves available from Germany and Italy— Filling Machines from Germany — Laboratory Equipment and Concentrates from Switzerland.

Publishers of "European Aerosol Survey", a quarterly periodical

Catalogues and Prices on Request.

Three highlights of the Allied Chemical & Dye's exhibit are shown in the above photos. At left, John Barry, General Chemical demonstrator, pressure fills a shave cream aerosol to explain to the public how aerosols work. In the center photo, little Meg Rynas uses her "baby" to help demonstrate one of the experimental aerosols, a baby powder. At right, Mr. Barry is filling two quart containers from a single aerosol before the audience at the exhibit. The container holds a three months' supply of shave cream.

Aerosol Show at Grand Central Station

AEROSOLS were demonstrated to 100,000 New Yorkers and other travelers through New York's Grand Central Station early in June in a popular science demonstration conducted by the General Chemical Division of Allied Chemical & Dye Corp. An aerosol shave cream and an aerosol air freshener were made for each audience, and both the pressure filling and cold fill methods of aerosol packaging were shown.

Some twenty demonstrations were conducted each day, with an average daily audience of six to eight thousand. The show was put on in the Investment Information Center operated in the Station by Merrill, Lynch, Pierce Fenner & Beane.

Aerosol products of the future were also previewed. Among such new types of aerosols shown were sprayon bandges, baby powders and rash preventives, after-shave lotions, men's hair dressings, window cleaners and aerosol antiseptics.

Newman-Green Expansion

Newman-Green Co., Addison, Ill., has announced completion of the first phase of an expansion program to increase production, shipping, warehouse, and office space. The company, a manufacturer of valves for all types of pressure products, has moved into its newly-completed concrete block wing to the existing company headquarters. Another structure is planned to house offices, shipping, and warehousing operations.

Bridgeport Names Mich. Rep.

The Aer-a-sol division of Bridgeport Brass Co., Bridgeport, Conn., has named Van Dusen and Graham, Grand Rapids, as sales representatives in that area of Michigan. The company's full line of aerosol insecticides, moth proofers, air refreshers, and other specialties will be handled by Van Dusen and Graham.

Glass Cleaner Spray

Larvex Products Corp., New Brunswick, N. J., are marketing a new aerosol glass cleaner tradenamed "MYNA."

Aerosol Rust Preventive

Eastern Aerosol Products, Newfoundland, N. J., recently put on the market a new rust preventive spray, "Rust Chek." It comes in a 12-ounce container which provides about 80 square feet of coverage. The product is intended for use on tools, instruments, molds, dies, nested metal parts, machinery, and most other metal equipment.

Children's Satin Set

A children's version of its "Satin Set" pin-curl hair spray has been placed on the consumer market by Revlon, Inc. The new product bears a label similar to that for the senior size, and uses the tradename "Satin-Set for Children."

Sprayon Expansion Set

Sprayon Products, Inc., Cleveland, is in the process of expanding its Cleveland plant for installation of a new aerosol packaging line. Current plans call for an expansion of 37,000 square feet.

E. P. Nicholson Dies

Edwin P. Nicholson, sales representative for Givaudan-Delawanna, Inc., in the New York-New Jersey area, died May 24 after a five months' illness. He was 57. Mr. Nicholson had been associated with Givaudan for 26 years and had been in the aromatic chemical, perfume and related industries for 36 years.

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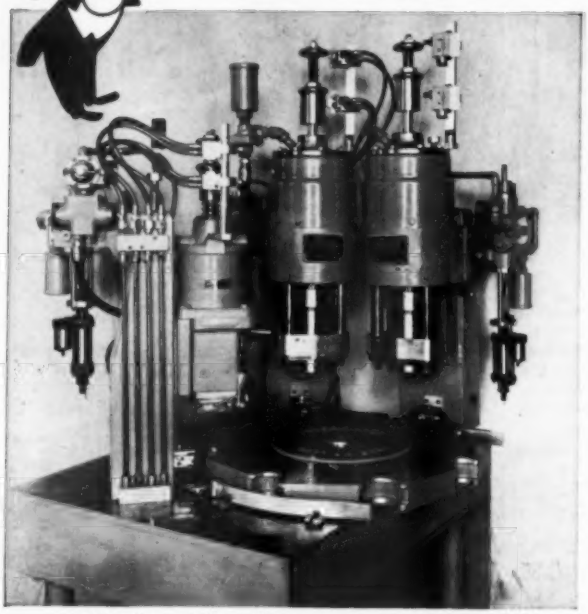

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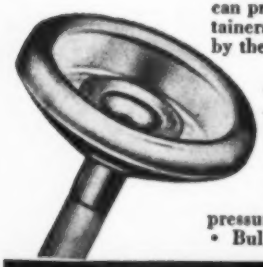

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Who's Who in the Aerosol Industry

Lyle D. Goodhue, in collaboration with W. N. Sullivan co-authored U. S. Patent 2,321,023 covering insecticidal aerosols, a little over 15 years ago — and "Goodhue and Sullivan" has now become as synonymous with the aerosol industry as Carnegie with steel.

Although the original idea for an aerosol dispenser was conceived as early as 1935, while Dr. Goodhue was working with a problem of vaporization of nicotine for greenhouse fumigation at Beltsville Research Center, it was several years later that the original liquefied gas idea was tested.

During World War II, Dr. Goodhue helped develop improved formulations containing DDT. After the war, he returned to industrial work, joining Airsol, Inc., Neodesha, Kansas, an aerosol producer during the war. The company subsequently placed on the market the first aerosol in the low cost "tin can" container.

In 1947, Dr. Goodhue joined Phillips Petroleum Co., Bartlesville, Okla., where he heads a research group devoted to studies on new agricultural chemicals. His recent publications are indicative of their success in development of new insect and rodent repellents, defoliants, plant hormones and nematocides as well as a non-phytotoxic hydrocarbon solvent applicable for plant sprays.

William N. Sullivan, Jr., presently working on problems of dis-insectization of aircraft, has earned a place as one of the "founding fathers" of the aerosol industry. A native of Massachusetts, he received his B.S. and M.S. from the University of Mass. and then started his career with the Bureau of Entomology and

Plant Quarantine in Washington, D. C. A five year period with the U. S. Army Air Force, when he was commissioned as a 1st Lieutenant in the Sanitary Corps in 1942, took Mr. Sullivan to U. S. air bases in the North African and Indian war areas. A preliminary assignment to Wright Field, Dayton, O., presaged the first accepted aerosol dispenser, developed from the Westinghouse container at this laboratory.

While attached to the Air Transport Command, he introduced and trained personnel in use of the newly-developed aerosol insecticides in British West Africa, North Africa and Karachie, India, and supervised de-insecticizing U. S. planes to prevent the spread of the malaria-bearing anopheles gambia mosquito and other insects. In 1946, he was a radiological monitor on atomic bomb tests at Bikini. Leaving the service on inactive duty as a Major, he returned to the USDA in 1947.

Robert A. Fulton of the U. S. Dept. of Agriculture is rounding out his eleventh year of activity in the aerosol industry. Instrumental in the development of the first low pressure aerosol in 1947, he has continuously encouraged commercial development of aerosols.

USDA's Aerosol Chemical Project, which Dr. Fulton directs, has, during the past 10 years adhered closely to a program of aerosol research that has included: improvement of aerosol propellants, formulas and containers; cooperation with military agencies and industry in developing aerosol specifications; cooperation with government agencies and industry in testing aerosols to measure their abilities to meet these established specifications; close cooperation with industry to maintain and improve aerosol quality; and cooperation with USDA research entomologists to develop better aerosols containing more effective formulations for the control of greenhouse pests.

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APPLE BLOSSOM...No. 3122
OIL SWEET PEA.... No. 3123
OIL WISTARIA.....No. 3124
OIL GARDENIA..... No. 3125
OIL BOUQUET E.T. No. 3126
OIL BOUQUET P.C. No. 3127
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The Agricultural Research Center at Beltsville, Md., has issued many of the container, valve, propellant, and formula refinements that have helped make aerosols a multimillion dollar business.

Dr. Fulton is a native of Corvallis, Ore., being graduated from Oregon State College. He obtained his Master's Degree from the University of Wisconsin, and his Doctor's degree from Leland Stanford University. He has been with USDA since 1929.

Pyrethrum in Aerosols

A promising future in the use of pyrethrum in aerosols for fly control in the home was predicted by K. F. Goodwin-Bailey, English entomologist, in an article appearing in the *Pyrethrum Post* for January. Entitled "Pyrethrum and Allethrin in Insecticides and Aerosols," the article points out the rapid knockdown action and effectiveness against resistant strains achieved through use of this valuable insecticide.

The author sees a "tremendous future particularly for the control of stored products insects, where use of a relatively non-poisonous insecticide is essential." He credits the introduction of powerful synergists with having provided most of the impetus for this new future.

As to allethrin Dr. Goodwin-Bailey is not so hopeful. The main problems he sees are present high production costs, lack of a really good synergist, and too-complicated manufacture. He expresses hope that recent improvements in the production of both products will add substantially to the world supply.

Givaudan at 90 Visits U. S.

Xavier Givaudan, accompanied by his son Andre, visited his company's research center at Delawanna, N. J. last month, after an absence from the United States of seven years. Mr. Givaudan, chairman of the board of The Givaudan Corp. and its associate companies, Givaudan-Delawanna, Inc., Givaudan Flavor Inc., and Sindar Corp., is still active in the management of the Givaudan organization at the age of 90.

Curtis' Purse-Sized Spray

A purse-sized, refillable areosol spray, containing a new fixative for all types of hair is being introduced by Helene Curtis Industries, Chicago. Called "Purse-Spray," the new product is about the size of a lipstick, packed in a plasticized glass bottle, and directed to feminine appeal with gold mesh accents and black cap. The "Purse-Spray" and refiller container are being offered as a combination at an introductory price of $1.85.

The new product is sold in two parts: the glass unit, with special spray valve; and the metal supply-can, with a filling nozzle. When the glass unit gets low on lacquer, the plastic valve button is removed and the supply can's filling nozzle fits into the buttonless valve.

Newman-Green, Inc., Chicago, makes both the spray valve and the transfer valve.

West Coast Aerosol Market

Aerosol developments on the west coast of the United States seem to be lagging well behind the rest of the country, according to a report from the California correspondent of AEROSOL AGE. One of the few custom packers operating in the west coast area, McGuire & Co., Oakland, Calif., reportedly closed down its plant about two months ago because of lack of an adequate volume of business to support full time operation. Equipment has been offered for sale.

While progress to date has been slow, there seems to be an equally determined view that eventually and inevitably a substantial volume of aerosol packing will be done in this area. The general view seems to be that Los Angeles would be the logical center of aerosol operations on the west coast, but that the west coast market does not yet have a large enough population to warrant installation of high-speed, large-volume equipment required for economical operation.

California Spray Chemical Corp. reports that its marketing division has recommended that it pack several of its well known line of products in aerosol packages for the 1957 season. Similar plans are in various stages of study by numerous other firms.

Natl. Spray Can Expanding

Harry Schneider has been appointed vice-president in charge of plant production of National Spray Can Filling Corp., Brooklyn, N. Y., according to an announcement by Harry Richards, president of National. Mr. Schneider came to his new position on June 1st from Arrow Laquer Corp., Brooklyn, where he had served as production manager for the past ten years. The new appointment is part of National's current expansion program, with a new plant and an additional line planned for September of this year.

Continental Can Research Lab.

Continental Can Company opened a new $7,000,000 research and engineering laboratory in Chicago in mid-June. Located on Chicago's southside at 76th St. and Loomis Blvd. the new laboratory includes more than 260,000 square feet of floor space. It will employ 265 scientists and technicians working on problems of new metal container and non-metal components, new machines for making and closing containers, and new products suitable for packaging in metal containers. T. C. Fogarty, President of Continental Can, declared that this new research development center is the largest and most advanced under one roof in the entire can making industry. Dedication ceremonies were conducted June 14.

'Spray Net' Suit Settled

A trade-mark infringement suit by Helene Curtis Industries, Inc. against the Olin-Mathieson Chemical Corp. was recently settled out of court by an agreement between the two parties. The suit had charged that the E. R. Squibb division of Olin-Mathieson had infringed the Curtis trade mark, "Spray Net," by use of the term "Spray Hair Net" on a hair preparation of its own.

—Convention Calendar—

National Retail Dry Goods Association, Packaging Clinic, *Hotel Statler, New York City*.....June 25-27

National Hardware Show, *New York Coliseum*....June 25-29

National Supermarket Non-Food Exhibit, *New York Coliseum, New York City*.....Sept. 10-13

Packaging Institute, 18th annual forum, *Statler Hotel, Cleveland*.....Sept. 11-14

Packaging Machinery Mfrs. Institute, annual meeting, *Skytop, Pa.*.....Oct. 5-8

Chemical Specialties Manufacturers Association, *Mayflower Hotel, Washington, D. C.*.....December 3-5

National Packaging Exposition, *International Amphitheatre, Chicago*.....April 8-11, 1957

Chemical Specialties Manufacturers Association, *Drake Hotel, Chicago, Ill.*.....May 20-22, 1957

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- STENCIL INKS
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- PLASTIC SPRAYS

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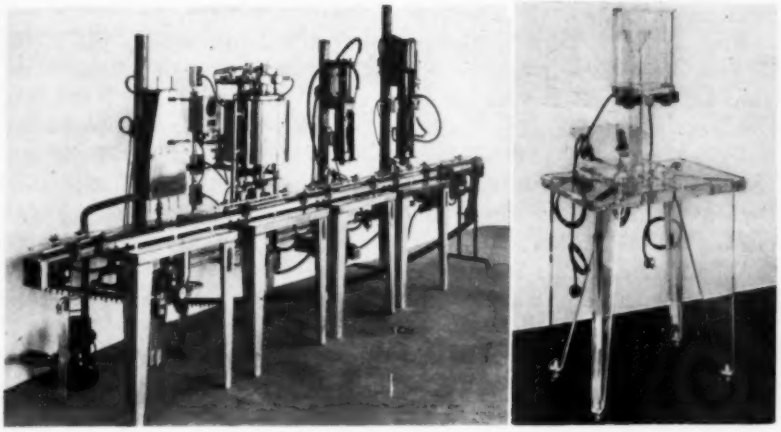


Mojonnier Associates exhibited a complete aerosol filling line at the recent C.S.M.A. convention in Chicago held at the Hotel Drake, May 20-22. The line includes: (1) an automatic air cleaner for cans or glass (2) a 2-spout compartmented filler (3) crimper (4) pressure filler and (5) coordinating conveyor.

The line has a capacity of from ten 16-oz. cans up to 60 small bottles per minute, depending on the container and the product to be filled. It will cold fill or pressure fill. The various units in the line are extremely versatile. The company emphasizes that a packager, starting with a minimum investment, can expand his line as his needs grow, building with units that are adaptable and interchangeable.

Also shown (right) is Mojonnier's all plastic filler,—a 2-spout semi-automatic unit for filling glass or plastic containers in all sizes up to gallons. It is designed for use in filling corrosive liquids such as sodium hypochlorite, sulfuric acid, etc. The machine shown at the Drake is made of corrosion-resistant Lucite. Bowls are also available in polyethylene or other plastic. It is supplied in semi-automatic or fully automatic models.

Tank Rack for Cylinders

Builder's Sheet Metal Works, Inc., New York, have available a tank rack for use where cylinders are to be inverted (for positioning before pressure filling aerosols). Of angle iron construction, the rack has casters for easy mobility. Other items previously introduced include a complete laboratory setup for aerosol filling and a hand pressure tester for containers.

New Filling Equipment

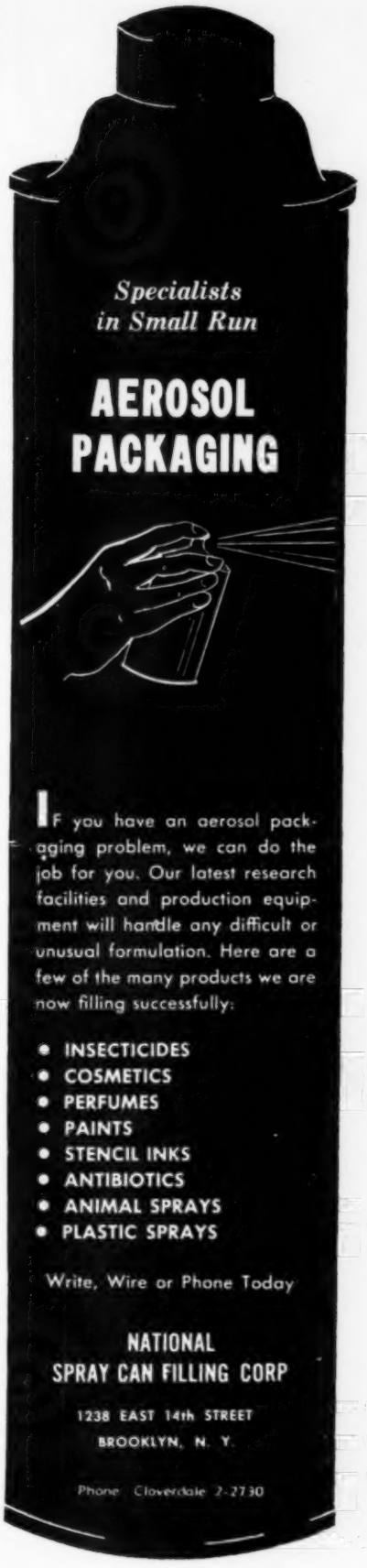
JG Machine Works, New York, has introduced new equipment in its aerosol filling line; a seal cap or valve seal spinner and a propellant injector.

The "Univer-Seal" Closure Spinner can complete up to 30 cycles per minute, and is adjustable to handle pharmaceutical vials, aerosol bottle valves and jar caps up to 75mm.

Model 14 Propellant Injector is capable of processing 30 units per minute. A coil for cooling is provided as standard equipment. Accuracy is within 3 grams, according to the company.

"Lanethyl" Data Sheet

Croda, Inc., New York, has issued a new data sheet on its alcohol-soluble lanolin derivative "Lanethyl." The product is a solid, light yellow, wax-like material which will, according to the company, deposit films that will not flake and are free from stickiness and roughness. It is recommended as a hair-fixative or setting medium and conditioner, and as a plasticizer or softener for more rigid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Metazene acts differently from most space deodorants in that it actually *destroys* odors *chemically*. It is neither a masking agent nor a desensitizer. No other compound compares with Metazene in its complete odor killing properties.

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film-forming materials, such as ethyl cellulose, PVP, shellac, etc., as used in aerosol hair lacquers.

Strippable Coating Tested

I-SIS 88, a new strippable coating developed by I-SIS Chemicals, Inc., Springdale, Conn., has been test packaged in aerosol containers, it was announced recently by George C. Voss, vice president. Copper and silver holloware and flatware can be protected from tarnishing during packaging, shipping and handling, and then the coating can be easily removed by the consumer by immersing the item in hot water.

Although the product is marketed only in bulk at the present time, the company said that they would consider packing and distributing the product as an aerosol if sufficient dealer interest is aroused.

Styrex New Dow Plastic

Dow Chemical Company, Midland, Mich., will begin marketing a new plastic called "Styrex" this fall, one use for which will be in the manufacture of aerosol nozzles. The new plastic, based on styrene and acrylonitrile, is a rigid material that can be molded or extruded. It is reported to be strong and light in weight, and can be produced either in transparent or opaque colors. A new plant for production of "Styrex" is under construction at Midland, Mich.

To Issue Aerosol Catalog

Mojonnier Associates, Inc., Franklin Park, Ill., plan later this year to issue the first complete and comprehensive catalog of aerosol equipment and supplies ever published. The catalog will list practically everything the aerosol packager needs for daily production with the exception of containers, valves and product to be packed. It will be broken down into the following sections: Cleaners, fillers and crimpers; Can and bottle handling equipment; Testing and control equipment; Refrigeration equipment; Miscellaneous plant machinery; Laboratory equipment; Supplies. Mojonnier already manufactures or supplies many of the items which will be listed. Additional arrangements are being made so that when the catalog is issued later in the year an almost complete line of aerosol machinery, equipment and supplies will be available from this one source.

Water Repellent for Textiles

Textile Adjuncts Corp., 876 Pacific St., Brooklyn, indicate that their new aerosol water repellent, "Water Skipper," has been found to have a new field of use in textile mills in addition to its primary application as an on-the-spot water repellent for boatmen, sportsmen, etc. Tests in several textile mills disclosed that where drying cans and tenter frame clips were treated with a light application of the product, resin build-up was retarded. Also heat transfer was reduced to a minimum. Use of the product eliminated the need for removing drying cans from the mill for expensive and time-consuming coating.

Another use for the product is in the treatment of calender and embossing rolls as an anti-friction agent.

Water Skipper is an organic silicone-tung oil product. It is packaged in 12 oz. aerosol cans as well as in 3 lb. disposable cylinders.

Fluid Offers New Catalog

Designed to show how Fluid Chemical Co., Newark, N. J., provides services to customers, the Facilities Catalog is now available from the company. Described and illustrated are filling machines, packaging machines, quality control methods, storage, equipment research laboratories, warehouse facilities, etc.

New Artwork Fixative

Krylon, Inc., has just come out with a new giant container of "Workable Fixatif," an aerosol propelled fixative for use in protecting pencil, pastel or charcoal sketches and drawings. Containing 16.2 ounces, the new container is reportedly the largest can on the market. The fixative dries quickly and can be erased thoroughly and worked over for changes or corrections.

• To Make Propellants in Brazil

The Brazilian subsidiary of E. I. du Pont de Nemours & Co., Du Pont do Brasil, S. A. — Industrias Quimicas, will begin the manufacture of aerosol propellants early in 1957 at a new plant near Barra Mansa, Rio de Janeiro, Brazil. Initial production will be adequate to handle all Brazilian requirements for fluorinated hydrocarbon compounds over the next five years. Until now all propellants used in Brazil have had to be imported from the United States.

Liquid Plexiglass Sprays

A resistant new "Acrylic Spray" is offered by Acrolite Products, Inc., West Orange, N. J. The product has many of the same characteristics of liquid plexiglass used in the blisters of military aircraft, protecting personnel against all forms of weather. The new acrylic spray is said to be resistant to discoloring, chipping, cracking, or peeling. It may be applied to wood, metal, or paper surfaces; is odorless, non-flammable, and surfaces treated with it will be waterproof and resist sun, salt air, alkali, and fungus growth. The new sprays are guaranteed clog-proof, and are being marketed in 14 colors.

Newest D & O Catalog

Dodge & Olcott, Inc. is distributing its May, 1956 catalog of essential oils, aromatic chemicals and certified colors. The 36-page pocket-size booklet contains price and product listings, definitions, descriptions and other pertinent information.

Insecticide Formulator

(*from page* 25)

and long practice. Using the talents of formulation experts usually not only produces a better product, often at the most economical cost commensurate with the quality desired, but the consequences of using a homemade formula may very well be completely disastrous and extremely expensive if a poor product arrives on the market. The investment in time, materials and promotion may be a complete loss and a brand name and firm name seriously damaged.

Formulating is an art as well as a science and there is no substitute for the services of an experienced firm employing scientists skilled in the formulation of their products and competent by training, knowledge and experience to make those alterations which may seem so minor but are so important in arriving at the best possible formula for the application at hand and under the limitations set forth. This is perhaps particularly true in the aerosol industry because it is relatively new and the influence of the various important factors and of the newest developments may be less widely publicized than is the case in many older industries.★

CSMA Meeting

(*from page* 18)

ciable alteration. Very rapid counting is also desirable, as is indifference of the instrument to varying compositions.

Two different approaches to the problem are possible. One is a device used in England which involves collecting the particles on a suitable surface which is then scanned, television tube style, by a beam which records both size and number of particles. Another method involves drawing a representative sample of the aerosol through a detector system and counting the particles as they flow past a reference point. It is this type counter which Dr. Katz described.

The instrument has a nominal rating of one to 60 microns, but has detected particles down to 0.2 microns. This range would appear to make it suitable for use in the aerosol industry.

Other papers presented included the third installment of a paper on Non-Flammable Paint Strippers, earlier portions of which had been given at previous meetings. Part III, read by Bernard Berkeley of Foster D. Snell, noted that the presence of activators greatly improves the performance of methylene chloride paint strippers. Optimum improvement in performance depends largely on the binary solvent mixture and the type of organic coating to be removed.

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Additional investigatory work is required to develop "wax-free" paint strippers which can match the effective removal power of present day wax-type compounds.★

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OVER THE TRANSOM

REGISTRATION ran to well over 700 at the recent CSMA meeting in Chicago,—a new record for a mid-year meeting of the group. The report of the treasurer disclosed another new high for CSMA. This year's budget is up fifteen per cent over last year, to a record figure of $82,000.

* * *

The technique for handling hospitality rooms at the convention could well stand some further polishing. With sixty-six hospitality suites operating, and 700 at the convention, this leaves an average of just about ten to a suite, with no provision for anyone stopping downstairs for a shine or checking the mail desk. Maybe it might be practical another year to pitch the whole hospitality business into a common pot, with one suite for aerosol people, another for soaps, waxes, disinfectants, etc. Then you might be able to find whom you are looking for, and have a chance to step out for relief now and then without feeling that you were embarassing your host by cutting his crowd in half.

* * *

Mojonnier Associates exhibited a completely set up aerosol filling machine in their suite, including their new refrigeration unit. They played to a large audience of interested visitors. Exhibits present quite a problem in a hotel like the Drake, however there was no single piece in the Mojonnier display that was not readily portable. **(See Pg. 49)**

* * *

Attendance was stimulated at the formal meeting sessions by drawing for door prizes. Binoculars, a clock and a portable bar were among the items passed out, the bar going to Al Pero of Fluid Chemical.

* * *

A few readers of our last month's column took mild exception to the notes on the famous "steamroller." About half of those who looked with a jaundiced eye on this particular item denied that there is a "steam roller," while the balance asked "How would you figure to run any organization successfully without a steam roller?"

* * *

We went off the wrong side of the board on the time of the Hollywood meeting of CSMA. This will be December of '57,—not December '56. This year's December meeting is scheduled for Washington,—at the Mayflower and the dates are December 3, 4 and 5. Our advice still holds on the Hollywood Beach Hotel. Even if the meeting is over a year and a half off, December 9-12, 1957, we wouldn't take any chances on those reservations.

* * *

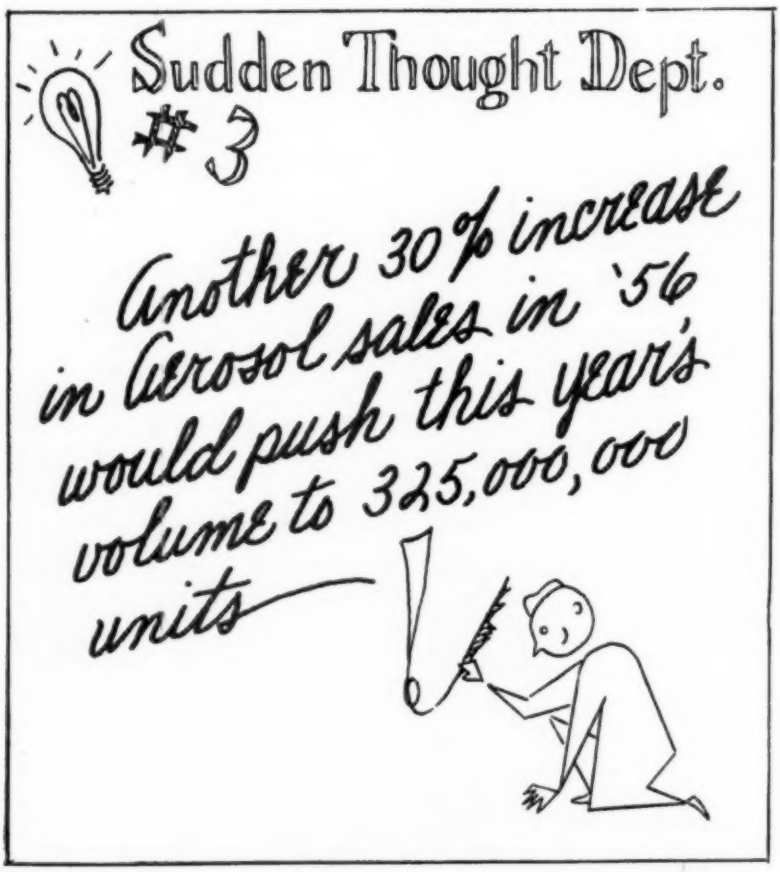
Thanks to the many readers of *Aerosol Age* who have been helping us clean up our mailing lists by sending in more recent addresses than the ones we originally had for them, eliminating duplications, etc. With the price of paper and postage what it is, such help is particularly welcome. And while we're about it, thanks too to the growing number who are entering subscriptions. *Aerosol Age* will be converted to a fully paid subscription list as promptly as possible,—first to secure more favorable postal treatment, and second because we don't believe in "give away" magazines. We want every one who might be interested to see a few sample copies,—enough so they can determine whether the magazine is worth getting regularly. Then we hope you will decide it is worth while to enter a subscription.

* * *

The response from readers has been very encouraging to us. Elsewhere in this issue *(See page 6)* *are just a few of the dozens and dozens of letters that we have been receiving from readers who apparently find Aerosol Age to be filling a need and doing a job for this expanding industry that was waiting to be done. (One came in addressed to "Spray Can Age"). We will welcome correspondence, of course, and don't think it must necessarily all be on the complimentary side. We can use a few critical suggestions too.*

* * *

New products which will shortly be appearing in aerosol cans include mouth and eye washes, baby lotions, tooth pastes and body rubs, according to an article, which appeared in the May 19th issue of *Tide*. A wide variety of food items may be anticipated in aerosol packages at an early date, the article also suggested.



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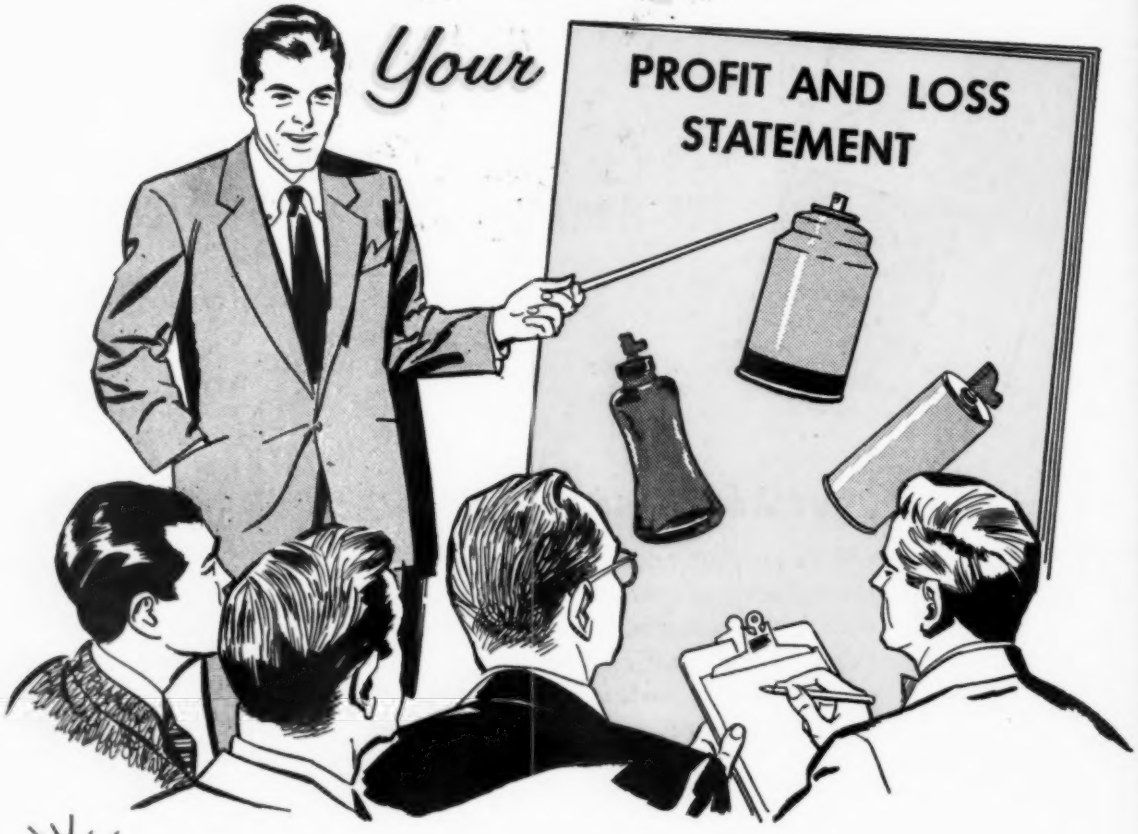

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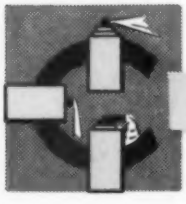

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